

RPG DB C++ Internals

1	Copyright notice.	18
2	Introduction.	19
3	Random number games.	20
3.1	RandomInteger	20
3.1.1	l	21
3.1.2	h	21
3.1.3	rmarin	21
3.1.4	RandomInteger	21
3.2	Dice	22
3.2.1	dice	25
3.2.2	nsides	25
3.2.3	ndice	25
3.2.4	_Dice	25
3.2.5	Dice	23
3.2.5.1	ns	23
3.2.5.2	nd	23
3.2.6	Dice	23
3.2.7	~Dice	24
3.2.8	Roll	24
3.2.9	TypeOfDice	24
3.2.9.1	ns	24
3.2.9.2	nd	25
4	Record	26
4.1	size	26
4.2	buffer	26
4.3	Record	27
4.4	Record	27
4.5	Record	27
4.6	~Record	27
4.7	operator =	27
4.8	NewBuffer	28
5	Character	29
5.1	name	52
5.2	player	52
5.3	race	52
5.4	chclass	52
5.5	alignment	53
5.6	sex	53

5.7	comments	53
5.8	image	53
5.9	hitpoints	53
5.10	age	54
5.11	strength	54
5.12	intelligence	54
5.13	wisdom	54
5.14	dexterity	54
5.15	constitution	55
5.16	charisma	55
5.17	exceptional_strength	55
5.18	level	55
5.19	experience_points	55
5.20	gold	56
5.21	hdie	56
5.22	ndie	56
5.23	maxdie	56
5.24	rawData	56
5.25	_Character	57
5.26	RecordToCharacter	57
5.27	UpdateRecord	57
5.28	Character	32
5.29	Character	33
5.29.1	s	34
5.29.2	i	34
5.29.3	w	34
5.29.4	d	34
5.29.5	c	35
5.29.6	ch	35
5.29.7	es	35
5.29.8	l	35
5.29.9	hd	35
5.29.10	nd	36
5.29.11	md	36
5.29.12	n	36
5.29.13	p	36
5.29.14	r	36
5.29.15	chc	37
5.29.16	align	37
5.29.17	sex	37
5.29.18	ag	37
5.29.19	com	37
5.29.20	im	38
5.30	Character	38
5.30.1	s	39

5.30.2	i	39
5.30.3	w	39
5.30.4	d	40
5.30.5	c	40
5.30.6	ch	40
5.30.7	l	40
5.30.8	hd	40
5.30.9	nd	41
5.30.10	md	41
5.30.11	n	41
5.30.12	p	41
5.30.13	r	41
5.30.14	chc	42
5.30.15	align	42
5.30.16	sex	42
5.30.17	ag	42
5.30.18	com	42
5.30.19	im	43
5.31	Character	43
5.32	Character	43
5.33	Character	43
5.34	~Character	43
5.35	Record	44
5.36	HitPoints	44
5.37	Age	44
5.38	Strength	44
5.39	Intelligence	44
5.40	Wisdom	45
5.41	Dexterity	45
5.42	Constitution	45
5.43	Charisma	45
5.44	ExceptionalStrength	45
5.45	Level	46
5.46	ExperiencePoints	46
5.47	Gold	46
5.48	Name	46
5.49	Player	46
5.50	Race	47
5.51	CharacterClass	47
5.52	Alignment	47
5.53	Sex	47
5.54	Comments	47
5.55	Image	48
5.56	SetAge	48
5.57	SetStrength	48

5.58	SetIntelligence	48
5.59	SetWisdom	48
5.60	SetDexterity	49
5.61	SetConstitution	49
5.62	SetCharisma	49
5.63	SetExceptionalStrength	49
5.64	SetExperiencePoints	49
5.65	SetGold	50
5.66	SetName	50
5.67	SetPlayer	50
5.68	SetRace	50
5.69	SetCharacterClass	50
5.70	SetAlignment	51
5.71	SetSex	51
5.72	SetComments	51
5.73	SetImage	51
5.74	AdvanceLevel	51
5.75	UpdateFromRecord	52
6	Monster	58
6.1	FreqType	61
6.1.1	Unique	62
6.1.2	VeryRare	62
6.1.3	Rare	62
6.1.4	Uncommon	63
6.1.5	Common	63
6.1.6	BogusFrequency	63
6.2	IntelligenceRating	63
6.2.1	Non	64
6.2.2	Animal	64
6.2.3	Semi	64
6.2.4	Low	64
6.2.5	Average	65
6.2.6	Very	65
6.2.7	Highly	65
6.2.8	Exceptionally	65
6.2.9	Genius	65
6.2.10	SupraGenius	66
6.2.11	Godlike	66
6.2.12	BogusIntelligence	66
6.3	HitType	66
6.3.1	Points	67
6.3.2	Dice	67
6.3.3	BogusHitType	67
6.4	name	88

6.5	alignment	89
6.6	treasureType	89
6.7	specialAttacks	89
6.8	specialDefences	89
6.9	psionics	89
6.10	comments	90
6.11	image	90
6.12	hitpoints	90
6.13	hdie	90
6.14	ndie	90
6.15	hplus	91
6.16	armclass	91
6.17	move	91
6.18	move_fly	91
6.19	move_swim	91
6.20	move_burrow	92
6.21	move_web	92
6.22	percentLair	92
6.23	numatt	92
6.24	magres	92
6.25	Range	93
	6.25.1 l	93
	6.25.2 h	93
6.26	damatt	93
6.27	noappearing	94
6.28	intelligence	94
6.29	frequency	94
6.30	hittype	94
6.31	size	94
6.32	rawData	95
6.33	RecordToMonster	95
6.34	UpdateRecord	95
6.35	_Monster	95
	6.35.1 hp	97
	6.35.2 hd	97
	6.35.3 nd	97
	6.35.4 hadj	97
	6.35.5 ac	97
	6.35.6 m	98
	6.35.7 mf	98
	6.35.8 ms	98
	6.35.9 mb	98
	6.35.10 mw	98
	6.35.11 pl	99
	6.35.12 na	99

6.35.13	daL	99
6.35.14	daH	99
6.35.15	mr	99
6.35.16	noaL	100
6.35.17	noaH	100
6.35.18	i	100
6.35.19	f	100
6.35.20	h	100
6.35.21	s	101
6.35.22	nm	101
6.35.23	al	101
6.35.24	tt	101
6.35.25	sa	101
6.35.26	sd	102
6.35.27	ps	102
6.35.28	com	102
6.35.29	im	102
6.36	Name	67
6.37	Alignment	68
6.38	TreasureType	68
6.39	SpecialAttacks	68
6.40	SpecialDefences	68
6.41	Psionics	68
6.42	Comments	69
6.43	Image	69
6.44	HitDieSides	69
6.45	NumHitDice	69
6.46	HitAdjustment	69
6.47	ArmorClass	70
6.48	LandSpeed	70
6.49	FlyingSpeed	70
6.50	SwimmingSpeed	70
6.51	BurrowingSpeed	70
6.52	WebSpeed	71
6.53	PercentInLair	71
6.54	NumberOfAttacks	71
6.55	MagicalResistance	71
6.56	HitPoints	71
6.57	DamagePerAttack	72
6.57.1	L	72
6.57.2	H	72
6.58	NumberAppearing	72
6.58.1	L	73
6.58.2	H	73
6.59	Intelligence	73

6.60	Frequency	73
6.61	Hittype	73
6.62	Size	74
6.63	Monster	74
6.64	Monster	74
6.64.1	hp	75
6.64.2	ac	76
6.64.3	m	76
6.64.4	mf	76
6.64.5	ms	76
6.64.6	mb	76
6.64.7	mw	77
6.64.8	pl	77
6.64.9	na	77
6.64.10	daL	77
6.64.11	daH	77
6.64.12	mr	78
6.64.13	noaL	78
6.64.14	noaH	78
6.64.15	i	78
6.64.16	f	78
6.64.17	s	79
6.64.18	nm	79
6.64.19	al	79
6.64.20	tt	79
6.64.21	sa	79
6.64.22	sd	80
6.64.23	ps	80
6.64.24	com	80
6.64.25	im	80
6.65	Monster	80
6.65.1	hd	82
6.65.2	nd	82
6.65.3	had	82
6.65.4	ac	82
6.65.5	m	83
6.65.6	mf	83
6.65.7	ms	83
6.65.8	mb	83
6.65.9	mw	83
6.65.10	pl	84
6.65.11	na	84
6.65.12	daL	84
6.65.13	daH	84
6.65.14	mr	84

6.65.15	noaL	85
6.65.16	noaH	85
6.65.17	i	85
6.65.18	f	85
6.65.19	s	85
6.65.20	nm	86
6.65.21	al	86
6.65.22	tt	86
6.65.23	sa	86
6.65.24	sd	86
6.65.25	ps	87
6.65.26	com	87
6.65.27	im	87
6.66	Monster	87
6.67	Monster	87
6.68	Monster	88
6.69	~Monster	88
6.70	Record	88
6.71	UpdateFromRecord	88
7	MonsterInstance	103
7.1	instanceName	105
7.2	instanceOf	105
7.3	instanceHitPoints	105
7.4	MonsterInstance	103
7.5	MonsterInstance	104
7.6	MonsterInstance	104
7.7	~MonsterInstance	104
7.8	InstanceName	104
7.9	InstanceHitPoints	104
7.10	UpdateInstanceHitPoints	105
7.11	InstanceOf	105
8	Spell	106
8.1	spclass	115
8.2	name	116
8.3	sptype	116
8.4	description	116
8.5	area	116
8.6	casttime	116
8.7	duration	117
8.8	savethrow	117
8.9	level	117
8.10	range	117
8.11	FlagBits	117
8.11.1	reversible:1	118

8.11.2	verbal:1	118
8.11.3	somatic:1	118
8.11.4	material:1	118
8.11.5	fill:4	119
8.12	FlagUnion	119
8.12.1	bits	119
8.12.2	byte	119
8.12.3	FlagUnion	120
8.13	flags	120
8.14	rawData	120
8.15	RecordToSpell	120
8.16	UpdateRecord	120
8.17	UpdateFromRecord	108
8.18	Spell	108
8.18.1	spc	109
8.18.2	nm	109
8.18.3	spt	109
8.18.4	desc	109
8.18.5	a	110
8.18.6	ct	110
8.18.7	dt	110
8.18.8	st	110
8.18.9	l	110
8.18.10	r	111
8.18.11	revP	111
8.18.12	verbP	111
8.18.13	somP	111
8.18.14	matP	111
8.19	Spell	112
8.20	Spell	112
8.21	Spell	112
8.22	~Spell	112
8.23	Record	112
8.24	SpellClass	113
8.25	Name	113
8.26	SpellType	113
8.27	Description	113
8.28	AreaOfEffect	113
8.29	CastingTime	114
8.30	Duration	114
8.31	SavingThrow	114
8.32	Level	114
8.33	Range	114
8.34	ReversibleP	115
8.35	VerbalP	115

8.36	SomaticP	115
8.37	MaterialP	115
9	Dressings	121
9.1	Treasure	121
9.1.1	name	133
9.1.2	descr	133
9.1.3	image	133
9.1.4	weight	134
9.1.5	aCAAdj	134
9.1.6	toHitAdj	134
9.1.7	damAdj	134
9.1.8	magResAdj	134
9.1.9	damProtAdj	135
9.1.10	sAdj	135
9.1.11	iAdj	135
9.1.12	wAdj	135
9.1.13	dAdj	135
9.1.14	cAdj	136
9.1.15	chAdj	136
9.1.16	gAdj	136
9.1.17	fAdj	136
9.1.18	swAdj	136
9.1.19	value	137
9.1.20	rawData	137
9.1.21	RecordToTreasure	137
9.1.22	UpdateRecord	137
9.1.23	UpdateFromRecord	123
9.1.24	Treasure	123
9.1.24.1	nm	124
9.1.24.2	d	125
9.1.24.3	i	125
9.1.24.4	w	125
9.1.24.5	aCA	125
9.1.24.6	toHA	125
9.1.24.7	damA	126
9.1.24.8	magResA	126
9.1.24.9	damProtA	126
9.1.24.10	sA	126
9.1.24.11	iA	126
9.1.24.12	wA	127
9.1.24.13	dA	127
9.1.24.14	cA	127
9.1.24.15	chA	127
9.1.24.16	gA	127
9.1.24.17	fA	128

	9.1.24.18	swA	128
	9.1.24.19	v	128
9.1.25	Treasure		128
9.1.26	Treasure		128
9.1.27	Treasure		129
9.1.28	~Treasure		129
9.1.29	Record		129
9.1.30	Name		129
9.1.31	Description		129
9.1.32	Image		130
9.1.33	Weight		130
9.1.34	ArmorClassAdj		130
9.1.35	ToHitAdj		130
9.1.36	DamageAdj		130
9.1.37	MagicalResistanceAdj		131
9.1.38	DamageProtectionAdj		131
9.1.39	StrengthAdj		131
9.1.40	IntelligenceAdj		131
9.1.41	WisdomAdj		131
9.1.42	DexterityAdj		132
9.1.43	ConstitutionAdj		132
9.1.44	CharismaAdj		132
9.1.45	GroundMovementAdj		132
9.1.46	FlyingAdj		132
9.1.47	SwimmingAdj		133
9.1.48	Value		133
9.2	TrickTrap		137
9.2.1	name		142
9.2.2	tttype		142
9.2.3	descr		142
9.2.4	image		143
9.2.5	rawData		143
9.2.6	RecordToTrickTrap		143
9.2.7	UpdateRecord		143
9.2.8	UpdateFromRecord		139
9.2.9	TrickTrap		139
9.2.9.1	nm		139
9.2.9.2	tt		140
9.2.9.3	d		140
9.2.9.4	i		140
9.2.10	TrickTrap		140
9.2.11	TrickTrap		140
9.2.12	TrickTrap		141
9.2.13	~TrickTrap		141
9.2.14	Record		141

9.2.15	Name	141
9.2.16	Type	141
9.2.17	Description	142
9.2.18	Image	142
9.3	Dressing	143
9.3.1	name	148
9.3.2	image	148
9.3.3	value	148
9.3.4	rawData	148
9.3.5	RecordToDressing	149
9.3.6	UpdateRecord	149
9.3.7	UpdateFromRecord	145
9.3.8	Dressing	145
9.3.8.1	nm	145
9.3.8.2	d	145
9.3.8.3	i	146
9.3.8.4	v	146
9.3.9	Dressing	146
9.3.10	Dressing	146
9.3.11	Dressing	146
9.3.12	~Dressing	147
9.3.13	Record	147
9.3.14	Name	147
9.3.15	Description	147
9.3.16	Image	147
9.3.17	Value	148
10	Spaces – Squares and Hexes, where things happen.	150
10.1	GeoConstants	150
10.1.1	Width = 100.0	150
10.1.2	HexSideLength = 57.735	151
10.1.3	HexPeakHeight = 28.8675	151
10.2	Exit	151
10.2.1	ExitType	152
10.2.1.1	Doorway	153
10.2.1.2	Door	153
10.2.1.3	LockedDoor	153
10.2.1.4	SecretDoor	153
10.2.1.5	OnewayDoor	154
10.2.1.6	TrapDoorUp	154
10.2.1.7	TrapDoorDown	154
10.2.1.8	StairsUp	154
10.2.1.9	StairsDown	154
10.2.1.10	WindowUnglazed	155
10.2.1.11	WindowGlazed	155

	10.2.1.12	Chimney	155
	10.2.1.13	Pit	155
	10.2.1.14	Unspecified	155
10.2.2	type		159
10.2.3	xCenter		160
10.2.4	yCenter		160
10.2.5	wallAligned		160
10.2.6	descr		160
10.2.7	image		160
10.2.8	nextSpaceIndexString		161
10.2.9	Type		156
10.2.10	XCenter		156
10.2.11	YCenter		156
10.2.12	WallAligned		156
10.2.13	Description		156
10.2.14	Image		157
10.2.15	NextSpaceIndexString		157
10.2.16	Exit		157
	10.2.16.1	t	158
	10.2.16.2	x	158
	10.2.16.3	y	158
	10.2.16.4	wa	158
	10.2.16.5	d	158
	10.2.16.6	im	159
	10.2.16.7	ns	159
10.2.17	~Exit		159
10.2.18	operator =		159
10.3	ExitVector		161
10.3.1	initSize = 10		167
10.3.2	growSize = 10		167
10.3.3	eVect		167
10.3.4	vSize		167
10.3.5	vCount		167
10.3.6	NearestIndex		168
	10.3.6.1	x	168
	10.3.6.2	y	168
10.3.7	ExitVector		162
10.3.8	~ExitVector		162
10.3.9	InsertExit		162
	10.3.9.1	source	162
10.3.10	[]		163
	10.3.10.1	index	163
10.3.11	Index		163
	10.3.11.1	index	163

10.3.12	operator ()	164
10.3.12.1	x	164
10.3.12.2	y	164
10.3.13	Nearest	164
10.3.13.1	x	165
10.3.13.2	y	165
10.3.14	DeleteAtIndex	165
10.3.14.1	index	165
10.3.15	DeleteNear	166
10.3.15.1	x	166
10.3.15.2	y	166
10.3.16	ElementCount	166
10.4	Item	168
10.4.1	ItemType	169
10.4.1.1	Character	170
10.4.1.2	Monster	170
10.4.1.3	Treasure	170
10.4.1.4	TrickTrap	170
10.4.1.5	Dressing	170
10.4.1.6	Unspecified	171
10.4.2	type	174
10.4.3	xCenter	174
10.4.4	yCenter	174
10.4.5	image	174
10.4.6	filename	174
10.4.7	Type	171
10.4.8	XCenter	171
10.4.9	YCenter	171
10.4.10	Image	171
10.4.11	Filename	172
10.4.12	Item	172
10.4.12.1	t	172
10.4.12.2	x	172
10.4.12.3	y	173
10.4.12.4	im	173
10.4.12.5	f	173
10.4.13	~Item	173
10.4.14	operator =	173
10.5	ItemVector	175
10.5.1	initSize = 10	180
10.5.2	growSize = 10	180
10.5.3	ivect	181
10.5.4	vSize	181
10.5.5	vCount	181

10.5.6	NearestIndex	181
10.5.6.1	x	182
10.5.6.2	y	182
10.5.7	ItemVector	175
10.5.8	~ItemVector	176
10.5.9	InsertItem	176
10.5.9.1	source	176
10.5.10	[]	176
10.5.10.1	index	177
10.5.11	Index	177
10.5.11.1	index	177
10.5.12	operator ()	177
10.5.12.1	x	178
10.5.12.2	y	178
10.5.13	Nearest	178
10.5.13.1	x	178
10.5.13.2	y	179
10.5.14	DeleteAtIndex	179
10.5.14.1	index	179
10.5.15	DeleteNear	179
10.5.15.1	x	180
10.5.15.2	y	180
10.5.16	ElementCount	180
10.6	Space	182
10.6.1	SpaceShape	184
10.6.1.1	Square	184
10.6.1.2	Hexagon	185
10.6.1.3	Undefined	185
10.6.2	shape	196
10.6.3	centerX	196
10.6.4	centerY	196
10.6.5	exitList	197
10.6.6	itemList	197
10.6.7	name	197
10.6.8	descr	197
10.6.9	bgcolor	197
10.6.10	rawData	198
10.6.11	RecordToSpace	198
10.6.12	UpdateRecord	198
10.6.13	UpdateFromRecord	185
10.6.14	Space	185
10.6.14.1	s	186
10.6.14.2	x	186

10.6.14.3	y	186
10.6.14.4	n	186
10.6.14.5	d	187
10.6.14.6	bg	187
10.6.15	Space	187
10.6.16	Space	187
10.6.17	~Space	187
10.6.18	Record	188
10.6.19	Shape	188
10.6.20	SetShape	188
10.6.21	CenterX	188
10.6.22	SetCenterX	188
10.6.23	CenterY	189
10.6.24	SetCenterY	189
10.6.25	NearestExit	189
10.6.25.1	x	189
10.6.25.2	y	190
10.6.26	IndexedExit	190
10.6.26.1	index	190
10.6.27	NumberOfExits	190
10.6.28	InsertExit	190
10.6.29	DeleteExitNear	191
10.6.29.1	x	191
10.6.29.2	y	191
10.6.30	DeleteExitAtIndex	191
10.6.30.1	index	192
10.6.31	Nearestitem	192
10.6.31.1	x	192
10.6.31.2	y	192
10.6.32	IndexedItem	193
10.6.32.1	index	193
10.6.33	NumberOfItems	193
10.6.34	InsertItem	193
10.6.35	DeleteItemNear	194
10.6.35.1	x	194
10.6.35.2	y	194
10.6.36	DeleteItemAtIndex	194
10.6.36.1	index	195
10.6.37	Name	195
10.6.38	SetName	195
10.6.39	Description	195
10.6.40	SetDescription	195
10.6.41	BackgroundColor	196

10.6.42	SetBackgroundColor	196
11	References	199
	Class Graph	200

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Role Playing DB – A database package that creates and maintains a database of RPG characters, monsters, treasures, spells, and playing environments.

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Introduction.

This manual describes the C++ class library used by the Role Playing Database. This consists of a collection of classes for the various base data structures used to represent the various informational objects used in Role Playing Games. These informational objects consist of *Characters*, *Monsters*, *“Magic” Spells*, *(Dungeon) Dressings*, and *“Spaces”*. All of these data objects are built upon a common low-level data object, a **Record**. Also included is a specialized random number generator that emulates one or more dice, dice being commonly used to implement random **chance** or “fate” in most Role Playing Games¹.

Although TSR’s *Advanced Dungeons & Dragons* [1], [2], and [3] were used as a reference in the design of these data structures, they should be generic enough to be usable for any other Role Playing Game system.

¹Some use shuffled decks of cards and others use a mix.

3

Random number games.

Names

3.1	class	RandomInteger	.....	20
3.2	class	Dice	.....	22

First a PD random number generator then a class that implements dice.

3.1

class **RandomInteger**

Public Members

3.1.4		RandomInteger (int low, int high)	21
-------	--	--	-------	----

Private Members

3.1.1	int	l	.....	21
3.1.2	int	h	.....	21
3.1.3	int	rmarin (int ij, int kl)	.....	21

RandomInteger class – generate a random number in the range specified.

This random number generator originally appeared in "Toward a Universal Random Number Generator" by George Marsaglia and Arif Zaman. Florida State University Report: FSU-SCRI-87-50 (1987)

It was later modified by F. James and published in "A Review of Pseudo-random Number Generators".

Converted from FORTRAN to C by Phil Lintell, James F. Hickling Management Consultants Ltd. Aug. 14, 1989.

THIS IS THE BEST KNOWN RANDOM NUMBER GENERATOR AVAILABLE. (However, a newly discovered technique can yield a period of 10^{600} . But that is still in the development stage.)

It passes ALL of the tests for random number generators and has a period of 2^{144} , is completely portable (gives bit identical results on all machines with at least 24-bit mantissas in the floating point representation).

The algorithm is a combination of a Fibonacci sequence (with lags of 97 and 33, and operation "subtraction plus one, modulo one") and an "arithmetic sequence" (using subtraction).

On a Vax 11/780, this random number generator can produce a number in 13 microseconds.

3.1.4

RandomInteger (int low,int high)

constructor;

3.1.1

int **l**

lower bound.

3.1.2

int **h**

upper bound.

3.1.3

int **rmarin** (int ij, int kl)

This is the initialization routine for the random number generator RANMAR(). NOTE: The seed variables can have values between: $0 \leq IJ \leq 31328$ $0 \leq KL \leq 30081$. The random number sequences created by these two seeds are of sufficient length to complete an entire calculation with. For example, if

several different groups are working on different parts of the same calculation, each group could be assigned its own IJ seed. This would leave each group with 30000 choices for the second seed. That is to say, this random number generator can create 900 million different subsequences – with each subsequence having a length of approximately 10^{30} .

Use $IJ = 1802$ and $KL = 9373$ to test the random number generator. The subroutine RANMAR should be used to generate 20000 random numbers. Then display the next six random numbers generated multiplied by $4096 \cdot 4096$. If the random number generator is working properly, the random numbers should be:

```
6533892.0  14220222.0  7275067.0
6172232.0  8354498.0  10633180.0
```

3.2

```
class Dice
```

Public Members

3.2.5	Dice (unsigned int ns, unsigned int nd = 1)	23
3.2.6	Dice ()	23
3.2.7	~Dice ()	24
3.2.8	unsigned int Roll ()	24
3.2.9	bool TypeOfDice (unsigned int& ns, unsigned int& nd)	24

Private Members

3.2.1	RandomInteger * dice	25
3.2.2	unsigned int nsides	25
3.2.3	unsigned int ndice	25
3.2.4	void _Dice ()	25

Dice Class – Just a random number generator using a dice model.

3.2.5

Dice (unsigned int ns, unsigned int nd = 1)

Arguments

3.2.5.1 unsigned int		
	ns	..... 23
3.2.5.2 unsigned int		
	nd	..... 23

Constructor, create 1 or more dice.

3.2.5.1

unsigned int **ns**

Number of sides (0 = percentile dice).

3.2.5.2

unsigned int **nd**

Number of dice.

3.2.6

Dice ()

Constructor – uninitialized dice.

3.2.7

```
~Dice ()
```

Destructor.

3.2.8

```
unsigned int Roll ()
```

Roll them bones...

3.2.9

```
bool TypeOfDice ( unsigned int& ns, unsigned int& nd )
```

Arguments

3.2.9.1	unsigned int& ns	.....	24
3.2.9.2	unsigned int& nd	.....	25

Return the type of dice.

3.2.9.1

```
unsigned int& ns
```

Number of sides (0 = percentile dice).

3.2.9.2

```
unsigned int& nd
```

Number of dice.

3.2.1

```
RandomInteger * dice
```

Random number generator.

3.2.2

```
unsigned int nsides
```

Number of sides (0 = percentile dice).

3.2.3

```
unsigned int ndice
```

Number of dice.

3.2.4

```
void _Dice ()
```

Internal initializer.

4

```
struct Record
```

Public Members

4.1	size_t	size	.....	26
4.2	char *	buffer	.....	26
4.3		Record ()	.....	27
4.4		Record (size_t size)	.....	27
4.5		Record (const Record& rec)	.....	27
4.6		~Record ()	.....	27
4.7	Record&	operator = (const Record& rec)	.....	27
4.8	void	NewBuffer (size_t size)	.....	28

Record structure.

Core resident record - it has a size and a chunk of memory (the record itself). This structure is lifted from the Home Librarian package. A very re-usable piece of code.

Lots of fun. I wish C++ had a garbage collector...

4.1

```
size_t size
```

Size of the record.

4.2

```
char * buffer
```

Buffer for the data.

4.3**Record** ()

Base constructor: empty buffer.

4.4**Record** (size_t size)

Constructor: preallocated buffer.

4.5**Record** (const Record& rec)

Constructor: record from another record.

4.6**~Record** ()

Destructor: free up allocated memory.

4.7**Record& operator =** (const Record& rec)

Assignment operator (copy a record) – allocate fresh memory.

4.8

```
void NewBuffer (size_t size)
```

Buffer (re-)allocator function.

```
class Character
```

Public Members

5.28	Character ()	.....	32
5.29	Character (int s, int i, int w, int d, int c, int ch, int es = 0, int l = 1, int hd = 6, int nd = 1, int md = 1, const char *n = "", const char *p = "", const char *r = "Human", const char *chc = "npc", const char *align = "", const char *sex = "", int ag = 0, const char *com = "", const char *im = "" )	.....	33
5.30	Character (int s, int i, int w, int d, int c, int ch, int l = 1, int hd = 6, int nd = 1, int md = 1, const char *n = "", const char *p = "", const char *r = "Human", const char *chc = "npc", const char *align = "", const char *sex = "", int ag = 0, const char *com = "", const char *im = "" )	.....	38
5.31	Character (const Character *that)	.....	43
5.32	Character (const Character &that)	.....	43
5.33	Character (const Record *rec)	.....	43
5.34	~Character ()	.....	43
5.35	operator const Record () const	.....	44
5.36	int HitPoints () const	.....	44
5.37	int Age () const	.....	44
5.38	int Strength () const	.....	44
5.39	int Intelligence () const	.....	44

5.40	int	Wisdom () const	45
5.41	int	Dexterity () const	45
5.42	int	Constitution () const	45
5.43	int	Charisma () const	45
5.44	int	ExceptionalStrength () const	45
5.45	int	Level () const	46
5.46	int	ExperiencePoints () const	46
5.47	int	Gold () const	46
5.48	const char *	Name () const	46
5.49	const char *	Player () const	46
5.50	const char *	Race () const	47
5.51	const char *	CharacterClass () const	47
5.52	const char *	Alignment () const	47
5.53	const char *	Sex () const	47
5.54	const char *	Comments () const	47
5.55	const char *	Image () const	48
5.56	int	SetAge (int newage).....	48
5.57	int	SetStrength (int newS)	48
5.58	int	SetIntelligence (int newI)	48
5.59	int	SetWisdom (int newW).....	48
5.60	int	SetDexterity (int newD).....	49
5.61	int	SetConstitution (int newC)	49
5.62	int	SetCharisma (int newCh)	49
5.63	int	SetExceptionalStrength (int newES)	49
5.64	int	SetExperiencePoints (int newEP)	49
5.65	int	SetGold (int newGP)	50

5.66	const char *	SetName (const char * newN)	50
5.67	const char *	SetPlayer (const char * newP)	50
5.68	const char *	SetRace (const char *newR)	50
5.69	const char *	SetCharacterClass (const char *newCh)	50
5.70	const char *	SetAlignment (const char *newA)	51
5.71	const char *	SetSex (const char *newS)	51
5.72	const char *	SetComments (const char *newC)	51
5.73	const char *	SetImage (const char *newI)	51
5.74	void	AdvanceLevel ()	51
5.75	void	UpdateFromRecord (const Record &rec)	52

Private Members

5.1	const char *	name	52
5.2	const char *	player	52
5.3	const char *	race	52
5.4	const char *	chclass	52
5.5	const char *	alignment	53
5.6	const char *	sex	53
5.7	const char *	comments	53
5.8	const char *		

		image	.....	53
5.9	int	hitpoints	.....	53
5.10	int	age	.....	54
5.11	int	strength	.....	54
5.12	int	intelligence	.....	54
5.13	int	wisdom	.....	54
5.14	int	dexterity	.....	54
5.15	int	constitution	.....	55
5.16	int	charisma	.....	55
5.17	int	exceptional_strength	.....	55
5.18	int	level	.....	55
5.19	int	experience_points	.....	55
5.20	int	gold	.....	56
5.21	int	hdie	.....	56
5.22	int	ndie	.....	56
5.23	int	maxdie	.....	56
5.24	Record	rawData	.....	56
5.25	void	_Character (int s, int i, int w, int d, int c, int ch, int es, int l, int hd, int nd, int md, const char * n, const char * p, const char * r, const char * chc, const char * align, const char * sex, int ag, const char * com, const char * im)	.....	57
5.26	void	RecordToCharacter ()	.....	57
5.27	void	UpdateRecord ()	.....	57

Basic character class. Contains all of the information needed to describe a player or non-player character.

5.28

Character ()

Base constructor.

5.29

```
Character ( int s, int i, int w, int d, int c, int ch, int es = 0,
int l = 1, int hd = 6, int nd = 1, int md = 1, const char *n = "",
const char *p = "", const char *r = "Human", const char *chc
= "npc", const char *align = "", const char *sex = "", int ag =
0, const char *com = "", const char *im = "" )
```

Arguments

5.29.1	int	s	.....	34
5.29.2	int	i	.....	34
5.29.3	int	w	.....	34
5.29.4	int	d	.....	34
5.29.5	int	c	.....	35
5.29.6	int	ch	.....	35
5.29.7	int	es	.....	35
5.29.8	int	l	.....	35
5.29.9	int	hd	.....	35
5.29.10	int	nd	.....	36
5.29.11	int	md	.....	36
5.29.12	const char *	n	.....	36
5.29.13	const char *	p	.....	36
5.29.14	const char *	r	.....	36
5.29.15	const char *	chc	.....	37
5.29.16	const char *	align	.....	37
5.29.17	const char *			

	sex	.....	37
5.29.18 int	ag	.....	37
5.29.19 const char *			
	com	.....	37
5.29.20 const char *			
	im	.....	38

Fighter character constructor (extra strength parameter).

5.29.1

int

s

Basic strength.

5.29.2

int

i

Intelligence.

5.29.3

int

w

Wisdom.

5.29.4

int

d

Dexterity.

5.29.5

int **c**

Constitution.

5.29.6

int **ch**

Charisma.

5.29.7

int **es**

Extra strength.

5.29.8

int **l**

Level.

5.29.9

int **hd**

Hit die.

5.29.10

```
int nd
```

Number of hit dice.

5.29.11

```
int md
```

Maximum number of hit dice.

5.29.12

```
const char * n
```

Character's name.

5.29.13

```
const char * p
```

Player's name.

5.29.14

```
const char * r
```

Character's race.

5.29.15

```
const char * chc
```

Character's class.

5.29.16

```
const char * align
```

Character's alignment.

5.29.17

```
const char * sex
```

Character's sex.

5.29.18

```
int ag
```

Character's age.

5.29.19

```
const char * com
```

Commentary.

5.29.20

```
const char * im
```

Image.

5.30

```
Character ( int s, int i, int w, int d, int c, int ch, int l = 1, int
hd = 6, int nd = 1, int md = 1, const char *n = "", const char
*p = "", const char *r = "Human", const char *chc = "npc",
const char *align = "", const char *sex = "", int ag = 0, const
char *com = "", const char *im = "" )
```

Arguments

5.30.1	int	s	.....	39
5.30.2	int	i	.....	39
5.30.3	int	w	.....	39
5.30.4	int	d	.....	40
5.30.5	int	c	.....	40
5.30.6	int	ch	.....	40
5.30.7	int	l	.....	40
5.30.8	int	hd	.....	40
5.30.9	int	nd	.....	41
5.30.10	int	md	.....	41
5.30.11	const char *	n	.....	41
5.30.12	const char *	p	.....	41
5.30.13	const char *	r	.....	41
5.30.14	const char *	chc	.....	42
5.30.15	const char *			

	align	.....	42
5.30.16 const char *	sex	.....	42
5.30.17 int	ag	.....	42
5.30.18 const char *	com	.....	42
5.30.19 const char *	im	.....	43

Non Fighter character constructor (no extra strength parameter).

5.30.1	
int	s

Basic strength.

5.30.2	
int	i

Intelligence.

5.30.3	
int	w

Wisdom.

5.30.4

`int d`

Dexterity.

5.30.5

`int c`

Constitution.

5.30.6

`int ch`

Charisma.

5.30.7

`int l`

Level.

5.30.8

`int hd`

Hit die.

5.30.9

```
int nd
```

Number of hit dice.

5.30.10

```
int md
```

Maximum number of hit dice.

5.30.11

```
const char * n
```

Character's name.

5.30.12

```
const char * p
```

Player's name.

5.30.13

```
const char * r
```

Character's race.

5.30.14

```
const char * chc
```

Character's class.

5.30.15

```
const char * align
```

Character's alignment.

5.30.16

```
const char * sex
```

Character's sex.

5.30.17

```
int ag
```

Character's age.

5.30.18

```
const char * com
```

Commentary.

5.30.19

`const char * im`

Image.

5.31

`Character (const Character *that)`

Copy constructor (from pointer).

5.32

`Character (const Character &that)`

Copy constructor (from reference).

5.33

`Character (const Record *rec)`

Type conversion constructor, from a Record.

5.34

`~Character ()`

Destructor.

5.35

```
operator const Record () const
```

Type conversion: convert to a Record.

5.36

```
int HitPoints () const
```

Return hit points.

5.37

```
int Age () const
```

Return age.

5.38

```
int Strength () const
```

Return strength.

5.39

```
int Intelligence () const
```

Return intelligence.

5.40

```
int Wisdom () const
```

Return wisdom.

5.41

```
int Dexterity () const
```

Return dexterity.

5.42

```
int Constitution () const
```

Return constitution.

5.43

```
int Charisma () const
```

Return charisma.

5.44

```
int ExceptionalStrength () const
```

Return exceptional strength.

5.45

```
int Level () const
```

Return level.

5.46

```
int ExperiencePoints () const
```

Return experience points.

5.47

```
int Gold () const
```

Return gold.

5.48

```
const char * Name () const
```

Return name.

5.49

```
const char * Player () const
```

Return player.

5.50

```
const char * Race () const
```

Return race.

5.51

```
const char * CharacterClass () const
```

Return character class.

5.52

```
const char * Alignment () const
```

Return alignment.

5.53

```
const char * Sex () const
```

Return sex.

5.54

```
const char * Comments () const
```

Return Comments.

5.55

```
const char * Image () const
```

Return image.

5.56

```
int SetAge (int newage)
```

Set age.

5.57

```
int SetStrength (int newS)
```

Set strength.

5.58

```
int SetIntelligence (int newI)
```

Set intelligence.

5.59

```
int SetWisdom (int newW)
```

Set wisdom.

5.60

```
int SetDexterity (int newD)
```

Set dexterity.

5.61

```
int SetConstitution (int newC)
```

Set constitution.

5.62

```
int SetCharisma (int newCh)
```

Set charisma.

5.63

```
int SetExceptionalStrength (int newES)
```

Set exceptional strength.

5.64

```
int SetExperiencePoints (int newEP)
```

Set experience points.

5.65

```
int SetGold (int newGP)
```

Set gold.

5.66

```
const char * SetName (const char * newN)
```

Set name.

5.67

```
const char * SetPlayer (const char * newP)
```

Set player.

5.68

```
const char * SetRace (const char *newR)
```

Set race.

5.69

```
const char * SetCharacterClass (const char *newCh)
```

Set character class.

5.70

```
const char * SetAlignment (const char *newA)
```

Set alignment.

5.71

```
const char * SetSex (const char *newS)
```

Set sex.

5.72

```
const char * SetComments (const char *newC)
```

Set comments.

5.73

```
const char * SetImage (const char *newI)
```

Set image.

5.74

```
void AdvanceLevel ()
```

Advance character's level.

5.75

```
void UpdateFromRecord (const Record &rec)
```

Update character from Record.

5.1

```
const char * name
```

Character name.

5.2

```
const char * player
```

Player name.

5.3

```
const char * race
```

Character race.

5.4

```
const char * chclass
```

Character class.

5.5

```
const char * alignment
```

Character alignment.

5.6

```
const char * sex
```

Character sex.

5.7

```
const char * comments
```

Additional comments.

5.8

```
const char * image
```

Character's image (GIF file).

5.9

```
int hitpoints
```

Character hit points.

5.10

```
int age
```

Character age.

5.11

```
int strength
```

Character strength.

5.12

```
int intelligence
```

Character intelligence.

5.13

```
int wisdom
```

Character wisdom.

5.14

```
int dexterity
```

Character dexterity.

5.15

`int constitution`

Character constitution.

5.16

`int charisma`

Character charisma.

5.17

`int exceptional_strength`

Character exceptional strength.

5.18

`int level`

Character level.

5.19

`int experience_points`

Experience points.

5.20

`int gold`

Gold pieces.

5.21

`int hdie`

Character hit die.

5.22

`int ndie`

Character number of hit dice.

5.23

`int maxdie`

Character maximum number of hit dice.

5.24

`Record rawData`

Data record.

5.25

```
void _Character (int s, int i, int w, int d, int c, int ch, int es,  
int l, int hd, int nd, int md, const char * n, const char * p, const  
char * r, const char * chc, const char * align, const char * sex,  
int ag, const char * com, const char * im)
```

Internal initializer function.

5.26

```
void RecordToCharacter ()
```

Convert internal record to character.

5.27

```
void UpdateRecord ()
```

Update internal record.

class **Monster**

Public Members

6.1	enum	FreqType	.....	61
6.2	enum	IntelligenceRating	.....	63
6.3	enum	HitType	.....	66
6.36	const char *	Name () const	.....	67
6.37	const char *	Alignment () const	.....	68
6.38	const char *	TreasureType () const	.....	68
6.39	const char *	SpecialAttacks () const	.....	68
6.40	const char *	SpecialDefences () const	.....	68
6.41	const char *	Psionics () const	.....	68
6.42	const char *	Comments () const	.....	69
6.43	const char *	Image () const	.....	69
6.44	int	HitDieSides () const	.....	69
6.45	int	NumHitDice () const	.....	69
6.46	int	HitAdjustment () const	.....	69
6.47	int	ArmorClass () const	.....	70
6.48	int	LandSpeed () const	.....	70
6.49	int	FlyingSpeed () const	.....	70
6.50	int	SwimmingSpeed () const	.....	70
6.51	int	BurrowingSpeed () const	.....	70
6.52	int	WebSpeed () const	.....	71
6.53	int	PercentInLair () const	.....	71

6.54	int	NumberOfAttacks () const	71
6.55	int	MagicalResistance () const	71
6.56	int	HitPoints () const	71
6.57	void	DamagePerAttack (int& L, int& H) const	72
6.58	void	NumberAppearing (int& L, int& H) const	72
6.59	IntelligenceRating	Intelligence () const	73
6.60	FreqType	Frequency () const	73
6.61	HitType	Hittype () const	73
6.62	double	Size () const	74
6.63		Monster ()	74
6.64		Monster (int hp, int ac, int m, int mf, int ms, int mb, int mw, int pl, int na, int daL, int daH, int mr, int noaL, int noaH, IntelligenceRating i, FreqType f, double s, const char * nm, const char * al, const char * tt, const char * sa, const char * sd, const char * ps, const char * com, const char * im)	74
6.65		Monster (int hd, int nd, int had, int ac, int m, int mf, int ms, int mb, int mw, int pl, int na, int daL, int daH, int mr, int noaL, int noaH, IntelligenceRating i, FreqType f, double s, const char * nm, const char * al, const char * tt, const char * sa, const char * sd, const char * ps, const char * com, const char * im)	80
6.66		Monster (const Monster *that).....	87
6.67		Monster (const Monster &that).....	87
6.68		Monster (const Record *rec).....	88
6.69		~Monster ()	88
6.70	operator const	Record () const	88
6.71	void	UpdateFromRecord (const Record &rec)	88

Private Members

6.4	const char *	name	.....	88
6.5	const char *	alignment	.....	89
6.6	const char *	treasureType	.....	89
6.7	const char *	specialAttacks	.....	89
6.8	const char *	specialDefences	.....	89
6.9	const char *	psionics	.....	89
6.10	const char *	comments	.....	90
6.11	const char *	image	.....	90
6.12	short int	hitpoints	.....	90
6.13	signed char	hdie	.....	90
6.14	signed char	ndie	.....	90
6.15	signed char	hplus	.....	91
6.16	signed char	armclass	.....	91
6.17	signed char	move	.....	91
6.18	signed char	move_fly	.....	91
6.19	signed char	move_swim	.....	91
6.20	signed char	move_burrow	.....	92
6.21	signed char			

		move_web	.....	92
6.22	signed char	percentLair	.....	92
6.23	signed char	numatt	.....	92
6.24	signed char	magres	.....	92
6.25	struct	Range	.....	93
6.26	Range	damatt	.....	93
6.27	Range	noappearing	.....	94
6.28	IntelligenceRating	intelligence	.....	94
6.29	FreqType	frequency	.....	94
6.30	HitType	hittype	.....	94
6.31	double	size	.....	94
6.32	Record	rawData	.....	95
6.33	void	RecordToMonster ()	.....	95
6.34	void	UpdateRecord ()	.....	95
6.35	void	_Monster (int hp, int hd, int nd, int hadj, int ac, int m, int mf, int ms, int mb, int mw, int pl, int na, int daL, int daH, int mr, int noaL, int noaH, IntelligenceRating i, FreqType f, HitType h, double s, const char * nm, const char * al, const char * tt, const char * sa, const char * sd, const char * ps, const char * com, const char * im )	.....	95

Basic monster class. Contains all of the information needed to describe a monster.

6.1

enum **FreqType**

Members

6.1.1	Unique	.....	62
6.1.2	VeryRare	.....	62
6.1.3	Rare	.....	62
6.1.4	Uncommon	.....	63
6.1.5	Common	.....	63
6.1.6	BogusFrequency	.....	63

Frequency Types.

6.1.1

Unique

This monster is unique (only one exists).

6.1.2

VeryRare

This monster is very rare, only a few exist. 4% probability of occurrence.

6.1.3

Rare

This monster is rare, not many exist. 11% probability of occurrence.

6.1.4

Uncommon

This monster is uncommon, some exist but are not seen often. 20% probability of occurrence.

6.1.5

Common

This monster is common, they are all over the place. 65% probability of occurrence.

6.1.6

BogusFrequency

This is a bogus frequency. Used to handle uninitialized values.

6.2

enum IntelligenceRating

Members

6.2.1	Non	.....	64
6.2.2	Animal	.....	64
6.2.3	Semi	.....	64
6.2.4	Low	.....	64
6.2.5	Average	.....	65
6.2.6	Very	.....	65

6.2.7	Highly	.....	65
6.2.8	Exceptionally	.....	65
6.2.9	Genius	.....	65
6.2.10	SupraGenius	.....	66
6.2.11	Godlike	.....	66
6.2.12	BogusIntelligence	.....	66

Intelligence Ratings.

6.2.1

Non

Unintelligent. Mindless critter. I score = 0.

6.2.2

Animal

Animal intelligence. I score = 1.

6.2.3

Semi

Semi-intelligent. I score = 2-4.

6.2.4

Low

Low intelligence. I score = 5-7.

6.2.5**Average**

Average (Human) intelligence. I score = 8-10.

6.2.6**Very**

Very intelligent. I score = 11-12.

6.2.7**Highly**

Highly intelligent. I score = 13-14.

6.2.8**Exceptionally**

Exceptionally intelligent. I score = 15-16.

6.2.9**Genius**

Genius. I score = 17-18.

6.2.10

SupraGenius

Supra-Genius. I score = 19-20.

6.2.11

Godlike

Godlike intelligence. I score = 21+.

6.2.12

BogusIntelligence

This is a bogus intelligence. Used to handle uninitialized values.

6.3

enum HitType

Members

6.3.1	Points	.....	67
6.3.2	Dice	.....	67
6.3.3	BogusHitType	.....	67

Method of hit points.

6.3.1**Points**

An explicit number of hit points. Typical for unique monsters, like demigods, major dragons, or demons.

6.3.2**Dice**

Normal hit dice system. Typical for monsters that are more common, like orcs.

6.3.3**BogusHitType**

This is a bogus value. Used to handle uninitialized values.

6.36

```
const char * Name () const
```

Return the name/type.

6.37

```
const char * Alignment () const
```

Return the alignment.

6.38

```
const char * TreasureType () const
```

Return the treasure type.

6.39

```
const char * SpecialAttacks () const
```

Return the special attacks.

6.40

```
const char * SpecialDefences () const
```

Return the special defenses.

6.41

```
const char * Psionics () const
```

Return the psionics.

6.42

```
const char * Comments () const
```

Return the commentary.

6.43

```
const char * Image () const
```

Return the image.

6.44

```
int HitDieSides () const
```

Return the hit die sides.

6.45

```
int NumHitDice () const
```

Return the number of hit dice.

6.46

```
int HitAdjustment () const
```

Return the hit dice adjustment.

6.47

```
int ArmorClass () const
```

Return the armor class.

6.48

```
int LandSpeed () const
```

Return the speed on land.

6.49

```
int FlyingSpeed () const
```

Return the speed in the air (flying).

6.50

```
int SwimmingSpeed () const
```

Return the speed in the water (swimming).

6.51

```
int BurrowingSpeed () const
```

Return the speed in the earth (burrowing).

6.52

```
int WebSpeed () const
```

Return the speed in web.

6.53

```
int PercentInLair () const
```

Return the percent in lair.

6.54

```
int NumberOfAttacks () const
```

Return the number of attacks.

6.55

```
int MagicalResistance () const
```

Return the magical resistance.

6.56

```
int HitPoints () const
```

Return the number of hit points.

6.57

```
void DamagePerAttack ( int& L, int& H ) const
```

Arguments

6.57.1	int&	L	.....	72
6.57.2	int&	H	.....	72

Return the damage per attack.

6.57.1

```
int& L
```

Lower bound.

6.57.2

```
int& H
```

Upper bound.

6.58

```
void NumberAppearing ( int& L, int& H ) const
```

Arguments

6.58.1	int&	L	.....	73
6.58.2	int&	H	.....	73

Return the number appearing.

6.58.1

`int& L`

Lower bound.

6.58.2

`int& H`

Upper bound.

6.59

`IntelligenceRating Intelligence () const`

Return the intelligence rating.

6.60

`FreqType Frequency () const`

Return the frequency.

6.61

`HitType Hittype () const`

Return the hit type.

6.62

```
double Size () const
```

Return the size.

6.63

```
Monster ()
```

Default constructor.

6.64

```
Monster ( int hp, int ac, int m, int mf, int ms, int mb, int
mw, int pl, int na, int daL, int daH, int mr, int noaL, int noaH,
IntelligenceRating i, FreqType f, double s, const char * nm,
const char * al, const char * tt, const char * sa, const char * sd,
const char * ps, const char * com, const char * im )
```

Arguments

6.64.1	int	hp	.....	75
6.64.2	int	ac	.....	76
6.64.3	int	m	.....	76
6.64.4	int	mf	.....	76
6.64.5	int	ms	.....	76
6.64.6	int	mb	.....	76
6.64.7	int	mw	.....	77
6.64.8	int	pl	.....	77
6.64.9	int	na	.....	77
6.64.10	int	daL	.....	77
6.64.11	int	daH	.....	77

6.64.12 int	mr	.....	78
6.64.13 int	noaL	.....	78
6.64.14 int	noaH	.....	78
6.64.15 IntelligenceRating			
	i	.....	78
6.64.16 FreqType	f	.....	78
6.64.17 double	s	.....	79
6.64.18 const char *			
	nm	.....	79
6.64.19 const char *			
	al	.....	79
6.64.20 const char *			
	tt	.....	79
6.64.21 const char *			
	sa	.....	79
6.64.22 const char *			
	sd	.....	80
6.64.23 const char *			
	ps	.....	80
6.64.24 const char *			
	com	.....	80
6.64.25 const char *			
	im	.....	80

Hit point type constructor (unique and very rare monsters).

6.64.1

int **hp**

Hit points.

6.64.2

`int ac`

Armor class.

6.64.3

`int m`

Land speed.

6.64.4

`int mf`

Flying speed.

6.64.5

`int ms`

Swimming speed.

6.64.6

`int mb`

Burrowing speed.

6.64.7

`int mw`

Speed in web.

6.64.8

`int pl`

Percent in lair.

6.64.9

`int na`

Number of attacks.

6.64.10

`int daL`

Minimum damage per attack.

6.64.11

`int daH`

Maximum damage per attack.

6.64.12

`int mr`

Magical resistance.

6.64.13

`int noaL`

Minimum number appearing.

6.64.14

`int noaH`

Maximum number appearing.

6.64.15

`IntelligenceRating i`

Intelligence rating.

6.64.16

`FreqType f`

Frequency type.

6.64.17

double s

Size.

6.64.18

const char * nm

Name/type.

6.64.19

const char * al

Alignment.

6.64.20

const char * tt

Treasure type.

6.64.21

const char * sa

Special attacks.

6.64.22

```
const char * sd
```

Special defenses.

6.64.23

```
const char * ps
```

Psionics.

6.64.24

```
const char * com
```

Commentary.

6.64.25

```
const char * im
```

Image.

6.65

```
Monster ( int hd, int nd, int had, int ac, int m, int mf, int ms,
int mb, int mw, int pl, int na, int daL, int daH, int mr, int noaL,
int noaH, IntelligenceRating i, FreqType f, double s, const char *
nm, const char * al, const char * tt, const char * sa, const char *
sd, const char * ps, const char * com, const char * im )
```

Arguments

6.65.1	int	hd	.....	82
6.65.2	int	nd	.....	82
6.65.3	int	had	.....	82
6.65.4	int	ac	.....	82
6.65.5	int	m	.....	83
6.65.6	int	mf	.....	83
6.65.7	int	ms	.....	83
6.65.8	int	mb	.....	83
6.65.9	int	mw	.....	83
6.65.10	int	pl	.....	84
6.65.11	int	na	.....	84
6.65.12	int	daL	.....	84
6.65.13	int	daH	.....	84
6.65.14	int	mr	.....	84
6.65.15	int	noaL	.....	85
6.65.16	int	noaH	.....	85
6.65.17	IntelligenceRating			
		i	.....	85
6.65.18	FreqType	f	.....	85
6.65.19	double	s	.....	85
6.65.20	const char *			
		nm	.....	86
6.65.21	const char *			
		al	.....	86
6.65.22	const char *			
		tt	.....	86
6.65.23	const char *			
		sa	.....	86
6.65.24	const char *			
		sd	.....	86
6.65.25	const char *			
		ps	.....	87
6.65.26	const char *			

	com	.....	87
6.65.27	const char *		
	im	.....	87

Hit dice type constructor (more common monsters).

6.65.1

```
int hd
```

Hit dice type (usually 8).

6.65.2

```
int nd
```

Number of hit dice.

6.65.3

```
int had
```

Hit point adjustment.

6.65.4

```
int ac
```

Armor class.

6.65.5`int m`

Land speed.

6.65.6`int mf`

Flying speed.

6.65.7`int ms`

Swimming speed.

6.65.8`int mb`

Burrowing speed.

6.65.9`int mw`

Speed in web.

6.65.10

`int pl`

Percent in lair.

6.65.11

`int na`

Number of attacks.

6.65.12

`int daL`

Minimum damage per attack.

6.65.13

`int daH`

Maximum damage per attack.

6.65.14

`int mr`

Magical resistance.

6.65.15

`int noaL`

Minimum number appearing.

6.65.16

`int noaH`

Maximum number appearing.

6.65.17

`IntelligenceRating i`

Intelligence rating.

6.65.18

`FreqType f`

Frequency type.

6.65.19

`double s`

Size.

6.65.20

`const char * nm`

Name/type.

6.65.21

`const char * al`

Alignment.

6.65.22

`const char * tt`

Treasure type.

6.65.23

`const char * sa`

Special attacks.

6.65.24

`const char * sd`

Special defenses.

6.65.25

```
const char * ps
```

Psionics.

6.65.26

```
const char * com
```

Commentary.

6.65.27

```
const char * im
```

Image.

6.66

```
Monster (const Monster *that)
```

Copy constructor (from pointer).

6.67

```
Monster (const Monster &that)
```

Copy constructor (from reference).

6.68**Monster** (const Record *rec)

Type conversion constructor, from a Record.

6.69**~Monster** ()

Destructor.

6.70operator const **Record** () const

Type conversion: convert to a Record.

6.71void **UpdateFromRecord** (const Record &rec)

Update Monster from Record.

6.4const char * **name**

Monster's (type) name.

6.5

```
const char * alignment
```

Monster's alignment.

6.6

```
const char * treasureType
```

Monster's treasure type.

6.7

```
const char * specialAttacks
```

Special attacks.

6.8

```
const char * specialDefences
```

Special defenses.

6.9

```
const char * psionics
```

Psionic abilities.

6.10

```
const char * comments
```

Other descriptive information.

6.11

```
const char * image
```

A picture.

6.12

```
short int hitpoints
```

Monster's hitpoints.

6.13

```
signed char hdie
```

Monster's hit die type (usually 8).

6.14

```
signed char ndie
```

Number of hit dice.

6.15

signed char **hplus**

Hit point adjustment.

6.16

signed char **armclass**

Armor class.

6.17

signed char **move**

Speed on land (walking/running).

6.18

signed char **move_fly**

Speed in the air (flying).

6.19

signed char **move_swim**

Speed in water (swimming).

6.20

signed char **move_burrow**

Speed in the earth (burrowing).

6.21

signed char **move_web**

Speed in web.

6.22

signed char **percentLair**

Percent in lair.

6.23

signed char **numatt**

Number of attacks.

6.24

signed char **magres**

Magical resistance.

6.25

struct **Range**

Public Members

6.25.1	signed char	l	.....	93
6.25.2	signed char	h	.....	93

Range structure (used for damage per attack and number appearing).

6.25.1

signed char **l**

Lower bound.

6.25.2

signed char **h**

Upper bound.

6.26

Range **damatt**

Damage per attack.

6.27Range **noappearing**

Number appearing.

6.28IntelligenceRating **intelligence**

Intelligence.

6.29FreqType **frequency**

Frequency.

6.30HitType **hittype**

Hit type.

6.31double **size**

Size in inches.

6.32

Record **rawData**

Data record.

6.33

```
void RecordToMonster ()
```

Convert internal record to monster.

6.34

```
void UpdateRecord ()
```

Update internal record.

6.35

```
void _Monster ( int hp, int hd, int nd, int hadj, int ac, int m,
int mf, int ms, int mb, int mw, int pl, int na, int daL, int daH,
int mr, int noaL, int noaH, IntelligenceRating i, FreqType f,
HitType h, double s, const char * nm, const char * al, const char
* tt, const char * sa, const char * sd, const char * ps, const char
* com, const char * im )
```

Arguments

6.35.1	int	hp	.....	97
6.35.2	int	hd	.....	97
6.35.3	int	nd	.....	97
6.35.4	int	hadj	.....	97

6.35.5	int	ac	.....	97
6.35.6	int	m	.....	98
6.35.7	int	mf	.....	98
6.35.8	int	ms	.....	98
6.35.9	int	mb	.....	98
6.35.10	int	mw	.....	98
6.35.11	int	pl	.....	99
6.35.12	int	na	.....	99
6.35.13	int	daL	.....	99
6.35.14	int	daH	.....	99
6.35.15	int	mr	.....	99
6.35.16	int	noaL	.....	100
6.35.17	int	noaH	.....	100
6.35.18	IntelligenceRating			
	i		.....	100
6.35.19	FreqType	f	.....	100
6.35.20	HitType	h	.....	100
6.35.21	double	s	.....	101
6.35.22	const char *			
	nm		.....	101
6.35.23	const char *			
	al		.....	101
6.35.24	const char *			
	tt		.....	101
6.35.25	const char *			
	sa		.....	101
6.35.26	const char *			
	sd		.....	102
6.35.27	const char *			
	ps		.....	102
6.35.28	const char *			
	com		.....	102
6.35.29	const char *			
	im		.....	102

Initializer.

6.35.1

```
int hp
```

Hit points.

6.35.2

```
int hd
```

Hit dice.

6.35.3

```
int nd
```

Number of hit dice.

6.35.4

```
int hadj
```

Hit point adjustment.

6.35.5

```
int ac
```

Armor class.

6.35.6

`int m`

Land speed.

6.35.7

`int mf`

Flying Speed.

6.35.8

`int ms`

Swimming speed.

6.35.9

`int mb`

Burrowing speed.

6.35.10

`int mw`

Speed in web.

6.35.11

`int pl`

Percent in lair.

6.35.12

`int na`

Number of attacks.

6.35.13

`int daL`

Minimum damage per attack.

6.35.14

`int daH`

Maximum damage per attack.

6.35.15

`int mr`

Magical resistance.

6.35.16

`int noaL`

Minimum number appearing.

6.35.17

`int noaH`

Maximum number appearing.

6.35.18

`IntelligenceRating i`

Intelligence rating.

6.35.19

`FreqType f`

Frequency type.

6.35.20

`HitType h`

Hit type.

6.35.21

double s

Size.

6.35.22

const char * nm

Name/Type.

6.35.23

const char * al

Alignment.

6.35.24

const char * tt

Treasure type.

6.35.25

const char * sa

Special attacks.

6.35.26

`const char * sd`

Special defenses.

6.35.27

`const char * ps`

Psionics.

6.35.28

`const char * com`

Commentary.

6.35.29

`const char * im`

Image.

7
 class **MonsterInstance**

Public Members

7.4	MonsterInstance (const Monster *iOf, const char *iN = "")	103
7.5	MonsterInstance (const MonsterInstance *that)...	104
7.6	MonsterInstance (const MonsterInstance &that) ..	104
7.7	~MonsterInstance ()	104
7.8	const char * InstanceName () const	104
7.9	int InstanceHitPoints () const	104
7.10	int UpdateInstanceHitPoints (int adj)	105
7.11	const Monster * InstanceOf () const	105

Private Members

7.1	const char * instanceName	105
7.2	const Monster * instanceOf	105
7.3	int instanceHitPoints	105

Monster “instance”. Used to implement a working instance of a monster.

7.4
MonsterInstance (const Monster *iOf, const char *iN = "")

Constructor.

7.5

MonsterInstance (const MonsterInstance *that)

Copy constructor (from pointer).

7.6

MonsterInstance (const MonsterInstance &that)

Copy constructor (from reference).

7.7

~MonsterInstance ()

Destructor.

7.8

const char * **InstanceName** () const

Return the name.

7.9

int **InstanceHitPoints** () const

Return the hit points.

7.10

```
int UpdateInstanceHitPoints (int adj)
```

Adjust the hit points.

7.11

```
const Monster * InstanceOf () const
```

Return base monster object.

7.1

```
const char * instanceName
```

Instance's name.

7.2

```
const Monster * instanceOf
```

What it is an instance of.

7.3

```
int instanceHitPoints
```

Instance's hit points.

```
class Spell
```

Public Members

8.17	void	UpdateFromRecord (const Record &rec)	108
8.18		Spell (const char *spc = "", const char *nm = "", const char *spt = "", const char *desc = "", const char *a = "", const char *ct = "", const char *dt = "", const char *st = "", int l = 0, int r = 0, bool revP = false, bool verbP = false, bool somP = false, bool matP = false)	108
8.19		Spell (const Spell *that)	112
8.20		Spell (const Spell &that)	112
8.21		Spell (const Record *rec)	112
8.22		~Spell ()	112
8.23	operator const	Record () const	112
8.24	const char *	SpellClass () const	113
8.25	const char *	Name () const	113
8.26	const char *	SpellType () const	113
8.27	const char *	Description () const	113
8.28	const char *	AreaOfEffect () const	113
8.29	const char *	CastingTime () const	114
8.30	const char *	Duration () const	114
8.31	const char *		

		SavingThrow () const	114
8.32	int	Level () const	114
8.33	int	Range () const	114
8.34	bool	ReversibleP () const	115
8.35	bool	VerbalP () const	115
8.36	bool	SomaticP () const	115
8.37	bool	MaterialP () const	115

Private Members

8.1	const char *	spclass	115
8.2	const char *	name	116
8.3	const char *	sptype	116
8.4	const char *	description	116
8.5	const char *	area	116
8.6	const char *	casttime	116
8.7	const char *	duration	117
8.8	const char *	savethrow	117
8.9	int	level	117
8.10	int	range	117
8.11	struct	FlagBits	117
8.12	union	FlagUnion	119
8.13	FlagUnion	flags	120
8.14	Record	rawData	120
8.15	void	RecordToSpell ()	120
8.16	void	UpdateRecord ()	120

Basic spell class. Contains all of the information needed to describe a spell.

8.17

```
void UpdateFromRecord (const Record &rec)
```

Update Spell from Record.

8.18

```
Spell ( const char *spc = "", const char *nm = "", const
char *spt = "", const char *desc = "", const char *a = "", const
char *ct = "", const char *dt = "", const char *st = "", int l =
0, int r = 0, bool revP = false, bool verbP = false, bool somP =
false, bool matP = false )
```

Arguments

8.18.1	const char *	spc	.....	109
8.18.2	const char *	nm	.....	109
8.18.3	const char *	spt	.....	109
8.18.4	const char *	desc	.....	109
8.18.5	const char *	a	.....	110
8.18.6	const char *	ct	.....	110
8.18.7	const char *	dt	.....	110
8.18.8	const char *	st	.....	110
8.18.9	int	l	.....	110

8.18.10 int	r	.....	111
8.18.11 bool	revP	.....	111
8.18.12 bool	verbP	.....	111
8.18.13 bool	somP	.....	111
8.18.14 bool	matP	.....	111

Constructor.

8.18.1

```
const char * spc
```

Spell class.

8.18.2

```
const char * nm
```

Name.

8.18.3

```
const char * spt
```

Type.

8.18.4

```
const char * desc
```

Description.

8.18.5

```
const char * a
```

Effect area.

8.18.6

```
const char * ct
```

Casting time.

8.18.7

```
const char * dt
```

Duration.

8.18.8

```
const char * st
```

Saving throw.

8.18.9

```
int l
```

Level.

8.18.10`int r`

Range.

8.18.11`bool revP`

Reversible?

8.18.12`bool verbP`

Verbal?

8.18.13`bool somP`

Somatic?

8.18.14`bool matP`

Material?

8.19**Spell** (const Spell *that)

Copy constructor (from pointer).

8.20**Spell** (const Spell &that)

Copy constructor (from reference).

8.21**Spell** (const Record *rec)

Type conversion constructor, from a Record.

8.22**~Spell** ()

Destructor.

8.23operator const **Record** () const

Type conversion: convert to a Record.

8.24

```
const char * SpellClass () const
```

Return the spell's class.

8.25

```
const char * Name () const
```

Return the spell's name.

8.26

```
const char * SpellType () const
```

Return the spell's type.

8.27

```
const char * Description () const
```

Return the spell's description.

8.28

```
const char * AreaOfEffect () const
```

Return the spell's area of effect.

8.29

```
const char * CastingTime () const
```

Return the spell's casting time.

8.30

```
const char * Duration () const
```

Return the spell's duration.

8.31

```
const char * SavingThrow () const
```

Return the spell's Saving Throw.

8.32

```
int Level () const
```

Return the spell's level.

8.33

```
int Range () const
```

Return the spell's range.

8.34

```
bool ReversibleP () const
```

Return spell's reversibility flag.

8.35

```
bool VerbalP () const
```

Return spell's verbal component flag.

8.36

```
bool SomaticP () const
```

Return spell's somatic component flag.

8.37

```
bool MaterialP () const
```

Return spell's material component flag.

8.1

```
const char * spclass
```

Spell class (type of character that can use it).

8.2

```
const char * name
```

Spell name.

8.3

```
const char * sptype
```

Spell type.

8.4

```
const char * description
```

Descriptive text.

8.5

```
const char * area
```

Area of effect.

8.6

```
const char * casttime
```

Casting time.

8.7

```
const char * duration
```

Duration.

8.8

```
const char * savethrow
```

Saving throw.

8.9

```
int level
```

Spell level.

8.10

```
int range
```

Range.

8.11

```
struct FlagBits
```

Public Members			
8.11.1	unsigned	reversible:1	118
8.11.2	unsigned	verbal:1	118
8.11.3	unsigned	somatic:1	118
8.11.4	unsigned	material:1	118
8.11.5	unsigned	fill:4	119

Flag bit structure.

8.11.1

unsigned **reversible:1**

Is spell reversible?

8.11.2

unsigned **verbal:1**

Does spell use a verbal component?

8.11.3

unsigned **somatic:1**

Does spell use a somatic component?

8.11.4

unsigned **material:1**

Does spell use a material component?

8.11.5

unsigned **fill:4**

Fill out the byte.

8.12

union **FlagUnion**

Members

8.12.1	FlagBits	bits	.....	119
8.12.2	unsigned char	byte	.....	119
8.12.3		FlagUnion ()	.....	120

Flag union.

8.12.1

FlagBits **bits**

As bits.

8.12.2

unsigned char **byte**

As a byte.

8.12.3**FlagUnion** ()

Constructor.

8.13**FlagUnion flags**

Flags – components and reversibility.

8.14**Record rawData**

Data record.

8.15**void RecordToSpell** ()

Convert internal record to monster.

8.16**void UpdateRecord** ()

Update internal record.

Dressings

Names

9.1	class	Treasure	.....	121
9.2	class	TrickTrap	.....	137
9.3	class	Dressing	.....	143

Various dressing classes.

class **Treasure**

Public Members

9.1.23	void	UpdateFromRecord (const Record &rec)	123
9.1.24		Treasure (const char *nm = "", const char *d = "", const char *i = "", int w = 0, int aCA = 0, int toHA = 0, int damA = 0, int magResA = 0, int damProtA = 0, int sA = 0, int iA = 0, int wA = 0, int dA = 0, int cA = 0, int chA = 0, int gA = 0, int fA = 0, int swA = 0, int v = 0)	123
9.1.25		Treasure (const Treasure *that)	128
9.1.26		Treasure (const Treasure &that)	128
9.1.27		Treasure (const Record *rec)	129
9.1.28		~Treasure ()	129
9.1.29	operator const	Record () const	129
9.1.30	const char *		

	Name () const	.....	129
9.1.31	const char *		
	Description () const	.....	129
9.1.32	const char *		
	Image () const	.....	130
9.1.33	int	Weight () const	..... 130
9.1.34	int	ArmorClassAdj () const	..... 130
9.1.35	int	ToHitAdj () const	..... 130
9.1.36	int	DamageAdj () const	..... 130
9.1.37	int	MagicalResistanceAdj () const	..... 131
9.1.38	int	DamageProtectionAdj () const	..... 131
9.1.39	int	StrengthAdj () const	..... 131
9.1.40	int	IntelligenceAdj () const	..... 131
9.1.41	int	WisdomAdj () const	..... 131
9.1.42	int	DexterityAdj () const	..... 132
9.1.43	int	ConstitutionAdj () const	..... 132
9.1.44	int	CharismaAdj () const	..... 132
9.1.45	int	GroundMovementAdj () const	..... 132
9.1.46	int	FlyingAdj () const	..... 132
9.1.47	int	SwimmingAdj () const	..... 133
9.1.48	int	Value () const	..... 133

Private Members

9.1.1	const char *		
	name	.....	133
9.1.2	const char *		
	descr	.....	133
9.1.3	const char *		
	image	.....	133
9.1.4	int	weight	..... 134
9.1.5	int	aCAdj	..... 134
9.1.6	int	toHitAdj	..... 134
9.1.7	int	damAdj	..... 134

9.1.8	int	magResAdj	.....	134
9.1.9	int	damProtAdj	.....	135
9.1.10	int	sAdj	.....	135
9.1.11	int	iAdj	.....	135
9.1.12	int	wAdj	.....	135
9.1.13	int	dAdj	.....	135
9.1.14	int	cAdj	.....	136
9.1.15	int	chAdj	.....	136
9.1.16	int	gAdj	.....	136
9.1.17	int	fAdj	.....	136
9.1.18	int	swAdj	.....	136
9.1.19	int	value	.....	137
9.1.20	Record	rawData	.....	137
9.1.21	void	RecordToTreasure ()	.....	137
9.1.22	void	UpdateRecord ()	.....	137

Treasures are the things the characters are trying to get and the monsters are guarding.

9.1.23

```
void UpdateFromRecord (const Record &rec)
```

Update Treasure from Record.

9.1.24

```
Treasure ( const char *nm = "", const char *d = "", const
char *i = "", int w = 0, int aCA = 0, int toHA = 0, int damA =
0, int magResA = 0, int damProtA = 0, int sA = 0, int iA = 0,
int wA = 0, int dA = 0, int cA = 0, int chA = 0, int gA = 0, int
fA = 0, int swA = 0, int v = 0 )
```

Arguments

9.1.24.1	const char *	nm	.....	124
9.1.24.2	const char *	d	.....	125
9.1.24.3	const char *	i	.....	125
9.1.24.4	int	w	.....	125
9.1.24.5	int	aCA	.....	125
9.1.24.6	int	toHA	.....	125
9.1.24.7	int	damA	.....	126
9.1.24.8	int	magResA	.....	126
9.1.24.9	int	damProtA	.....	126
9.1.24.10	int	sA	.....	126
9.1.24.11	int	iA	.....	126
9.1.24.12	int	wA	.....	127
9.1.24.13	int	dA	.....	127
9.1.24.14	int	cA	.....	127
9.1.24.15	int	chA	.....	127
9.1.24.16	int	gA	.....	127
9.1.24.17	int	fA	.....	128
9.1.24.18	int	swA	.....	128
9.1.24.19	int	v	.....	128

Constructor.

9.1.24.1

const char * **nm**

What it is called.

9.1.24.2

```
const char * d
```

Description.

9.1.24.3

```
const char * i
```

Graphical image (GIF).

9.1.24.4

```
int w
```

How heavy it is.

9.1.24.5

```
int aCA
```

Armor class adjustment.

9.1.24.6

```
int toHA
```

To hit adjustment.

9.1.24.7

`int damA`

Damage adjustment.

9.1.24.8

`int magResA`

Magical resistance adjustment.

9.1.24.9

`int damProtA`

Damage protection adjustment.

9.1.24.10

`int sA`

Strength adjustment.

9.1.24.11

`int iA`

Intelligence adjustment.

9.1.24.12

int **wA**

Wisdom adjustment.

9.1.24.13

int **dA**

Dexterity adjustment.

9.1.24.14

int **cA**

Constitution adjustment.

9.1.24.15

int **chA**

Charisma adjustment.

9.1.24.16

int **gA**

Ground movement adjustment.

9.1.24.17

```
int fA
```

Flying movement adjustment.

9.1.24.18

```
int swA
```

Swimming movement adjustment.

9.1.24.19

```
int v
```

Value.

9.1.25

```
Treasure (const Treasure *that)
```

Copy constructor (from pointer).

9.1.26

```
Treasure (const Treasure &that)
```

Copy constructor (from reference).

9.1.27**Treasure** (const Record *rec)

Type conversion constructor, from a Record.

9.1.28**~Treasure** ()

Destructor.

9.1.29operator const **Record** () const

Type conversion: convert to a Record.

9.1.30const char * **Name** () const

Return name.

9.1.31const char * **Description** () const

Return Description.

9.1.32

```
const char * Image () const
```

Return image.

9.1.33

```
int Weight () const
```

Return weight.

9.1.34

```
int ArmorClassAdj () const
```

Return armor class Adjustment.

9.1.35

```
int ToHitAdj () const
```

Return to hit adjustment.

9.1.36

```
int DamageAdj () const
```

Return damage adjustment.

9.1.37

```
int MagicalResistanceAdj () const
```

Return magical resistance adjustment.

9.1.38

```
int DamageProtectionAdj () const
```

Return damage protection adjustment.

9.1.39

```
int StrengthAdj () const
```

Return strength adjustment.

9.1.40

```
int IntelligenceAdj () const
```

Return intelligence adjustment.

9.1.41

```
int WisdomAdj () const
```

Return wisdom adjustment.

9.1.42

```
int DexterityAdj () const
```

Return dexterity adjustment.

9.1.43

```
int ConstitutionAdj () const
```

Return constitution adjustment.

9.1.44

```
int CharismaAdj () const
```

Return charisma adjustment.

9.1.45

```
int GroundMovementAdj () const
```

Return ground movement adjustment.

9.1.46

```
int FlyingAdj () const
```

Return flying adjustment.

9.1.47

```
int SwimmingAdj () const
```

Return swimming adjustment.

9.1.48

```
int Value () const
```

Return value.

9.1.1

```
const char * name
```

What it is called.

9.1.2

```
const char * descr
```

Description.

9.1.3

```
const char * image
```

Graphic.

9.1.4

`int weight`

How heavy it is.

9.1.5

`int aCAdj`

Armor Class adjustment.

9.1.6

`int toHitAdj`

To hit adjustment.

9.1.7

`int damAdj`

Damage adjustment.

9.1.8

`int magResAdj`

Magical Resistance adjustment.

9.1.9

`int damProtAdj`

Damage Protection adjustment.

9.1.10

`int sAdj`

Strength adjustment.

9.1.11

`int iAdj`

Intelligence adjustment.

9.1.12

`int wAdj`

Wisdom adjustment.

9.1.13

`int dAdj`

Dexterity adjustment.

9.1.14

`int cAdj`

Constitution adjustment.

9.1.15

`int chAdj`

Charisma adjustment.

9.1.16

`int gAdj`

Ground movement adjustment.

9.1.17

`int fAdj`

Flying movement adjustment.

9.1.18

`int swAdj`

Swimming movement adjustment.

9.1.19

```
int value
```

Value.

9.1.20

```
Record rawData
```

Data record.

9.1.21

```
void RecordToTreasure ()
```

Record to Treasure.

9.1.22

```
void UpdateRecord ()
```

Update record.

9.2

```
class TrickTrap
```

Public Members

9.2.8	void	UpdateFromRecord (const Record &rec)	139
9.2.9		TrickTrap (const char *nm = "", const char *tt = "", const char *d = "", const char *i = "")	139
9.2.10		TrickTrap (const TrickTrap *that)	140
9.2.11		TrickTrap (const TrickTrap &that)	140
9.2.12		TrickTrap (const Record *rec)	141
9.2.13		~TrickTrap ()	141
9.2.14	operator const	Record () const	141
9.2.15	const char *	Name () const	141
9.2.16	const char *	Type () const	141
9.2.17	const char *	Description () const	142
9.2.18	const char *	Image () const	142

Private Members

9.2.1	const char *	name	142
9.2.2	const char *	tttype	142
9.2.3	const char *	descr	142
9.2.4	const char *	image	143
9.2.5	Record	rawData	143
9.2.6	void	RecordToTrickTrap ()	143
9.2.7	void	UpdateRecord ()	143

Tricks and Traps are used to protect treasure and to generally keep the

players on their toes.

9.2.8

```
void UpdateFromRecord (const Record &rec)
```

Update TrickTrap from Record.

9.2.9

```
TrickTrap ( const char *nm = "", const char *tt = "", const
char *d = "", const char *i = "" )
```

Arguments

9.2.9.1	const char *		
	nm	.....	139
9.2.9.2	const char *		
	tt	.....	140
9.2.9.3	const char *		
	d	.....	140
9.2.9.4	const char *		
	i	.....	140

Constructor.

9.2.9.1

```
const char * nm
```

What it is called.

9.2.9.2

```
const char * tt
```

What type of trick or trap.

9.2.9.3

```
const char * d
```

Description.

9.2.9.4

```
const char * i
```

Graphical image (GIF).

9.2.10

```
TrickTrap (const TrickTrap *that)
```

Copy constructor (from pointer).

9.2.11

```
TrickTrap (const TrickTrap &that)
```

Copy constructor (from reference).

9.2.12

```
TrickTrap (const Record *rec)
```

Type conversion constructor, from a Record.

9.2.13

```
~TrickTrap ()
```

Destructor.

9.2.14

```
operator const Record () const
```

Type conversion: convert to a Record.

9.2.15

```
const char * Name () const
```

Return name.

9.2.16

```
const char * Type () const
```

Return trick or trap type.

9.2.17

```
const char * Description () const
```

Return description.

9.2.18

```
const char * Image () const
```

Return image.

9.2.1

```
const char * name
```

Name of the trick or trap.

9.2.2

```
const char * tttype
```

Type of trick or trap.

9.2.3

```
const char * descr
```

Description of the trick or trap.

9.2.4

```
const char * image
```

Graphic of the trick or trap.

9.2.5

```
Record rawData
```

Data record.

9.2.6

```
void RecordToTrickTrap ()
```

Record to TrickTrap.

9.2.7

```
void UpdateRecord ()
```

Update record.

9.3

```
class Dressing
```

Public Members

9.3.7	void	UpdateFromRecord (const Record &rec)	145
9.3.8		Dressing (const char *nm = "", const char *d = "", const char *i = "", int v = 0)	145
9.3.9		Dressing (const Dressing *that)	146
9.3.10		Dressing (const Dressing &that)	146
9.3.11		Dressing (const Record *rec)	146
9.3.12		~Dressing ()	147
9.3.13	operator const	Record () const	147
9.3.14	const char *	Name () const	147
9.3.15	const char *	Description () const	147
9.3.16	const char *	Image () const	147
9.3.17	int	Value () const	148

Private Members

9.3.1	const char *	name	148
9.3.2	const char *	image	148
9.3.3	int	value	148
9.3.4	Record	rawData	148
9.3.5	void	RecordToDressing ()	149
9.3.6	void	UpdateRecord ()	149

Random dungeon dressings – random odds and ends. Sometimes these things have value, but real treasures use the Treasure class.

9.3.7

void **UpdateFromRecord** (const Record &rec)

Update dressing from Record.

9.3.8

Dressing (const char *nm = "", const char *d = "", const char *i = "", int v = 0)

Arguments

9.3.8.1	const char *		
	nm	.....	145
9.3.8.2	const char *		
	d	.....	145
9.3.8.3	const char *		
	i	.....	146
9.3.8.4	int	v	..... 146

Constructor.

9.3.8.1

const char * **nm**

What it is called.

9.3.8.2

const char * **d**

Description.

9.3.8.3

```
const char * i
```

Graphical image (GIF).

9.3.8.4

```
int v
```

Value.

9.3.9

```
Dressing (const Dressing *that)
```

Copy constructor (from pointer).

9.3.10

```
Dressing (const Dressing &that)
```

Copy constructor (from reference).

9.3.11

```
Dressing (const Record *rec)
```

Type conversion constructor, from a Record.

9.3.12

```
~Dressing ()
```

Destructor.

9.3.13

```
operator const Record () const
```

Type conversion: convert to a Record.

9.3.14

```
const char * Name () const
```

Return name.

9.3.15

```
const char * Description () const
```

Return description.

9.3.16

```
const char * Image () const
```

Return image.

9.3.17

```
int Value () const
```

Return Value.

9.3.1

```
const char * name
```

The name of the object.

9.3.2

```
const char * image
```

The image of the object.

9.3.3

```
int value
```

The value of the object.

9.3.4

```
Record rawData
```

Data record.

9.3.5

```
void RecordToDressing ()
```

Record to Dressing.

9.3.6

```
void UpdateRecord ()
```

Update record.

10

Spaces – Squares and Hexes, where things happen.

Names

10.1	class	GeoConstants	.....	150
10.2	class	Exit	.....	151
10.3	class	ExitVector	.....	161
10.4	class	Item	.....	168
10.5	class	ItemVector	.....	175
10.6	class	Space	.....	182

Space class and related odds and ends.

10.1

class **GeoConstants**

Public Members

10.1.1	const float	Width = 100.0	.....	150
10.1.2	const float	HexSideLength = 57.735	.....	151
10.1.3	const float	HexPeakHeight = 28.8675	.....	151

Geometric constants.

10.1.1

const float **Width = 100.0**

Space “width”.

10.1.2

```
const float HexSideLength = 57.735
```

Side of a hex (computed to give a width of 100).

10.1.3

```
const float HexPeakHeight = 28.8675
```

Height of peak above vertical sides.

10.2

```
class Exit
```

Public Members

10.2.1	enum	ExitType	.....	152
10.2.9	ExitType	Type () const	.....	156
10.2.10	double	XCenter () const	.....	156
10.2.11	double	YCenter () const	.....	156
10.2.12	bool	WallAligned () const	.....	156
10.2.13	const char *	Description () const	.....	156
10.2.14	const char *	Image () const	.....	157
10.2.15	const char *	NextSpaceIndexString () const	.....	157
10.2.16		Exit (ExitType t = Unspecified, double x = 0.0, double y = 0.0, bool wa = true, const char *d = "", const char *im = "", const char *ns = "" )	.....	157
10.2.17		~Exit ()	.....	159

10.2.18	Exit&	operator =	(const Exit& source)	159
---------	-------	-------------------	----------------------------	-----

Private Members

10.2.2	ExitType	type	.....	159
10.2.3	float	xCenter	.....	160
10.2.4	float	yCenter	.....	160
10.2.5	bool	wallAligned	.....	160
10.2.6	const char *	descr	.....	160
10.2.7	const char *	image	.....	160
10.2.8	const char *	nextSpaceIndexString	.....	161

Exit points and other inter-spatial interconnection points like windows and staircases.

10.2.1

```
enum ExitType
```

Members

10.2.1.1	Doorway	.....	153
10.2.1.2	Door	.....	153
10.2.1.3	LockedDoor	.....	153
10.2.1.4	SecretDoor	.....	153
10.2.1.5	OnewayDoor	.....	154
10.2.1.6	TrapDoorUp	.....	154
10.2.1.7	TrapDoorDown	.....	154
10.2.1.8	StairsUp	.....	154
10.2.1.9	StairsDown	.....	154
10.2.1.10	WindowUnglazed	.....	155

10.2.1.11	WindowGlazed	.....	155
10.2.1.12	Chimney	.....	155
10.2.1.13	Pit	.....	155
10.2.1.14	Unspecified	.....	155

Exit types.

10.2.1.1

Doorway

Plain doorway.

10.2.1.2

Door

Plain door.

10.2.1.3

LockedDoor

Locked door.

10.2.1.4

SecretDoor

Secret door.

10.2.1.5

OnewayDoor

One way door.

10.2.1.6

TrapDoorUp

Trapdoor, up.

10.2.1.7

TrapDoorDown

Trapdoor, down.

10.2.1.8

StairsUp

Stairs, up.

10.2.1.9

StairsDown

Stairs, down.

10.2.1.10

WindowUnglazed

Window, unglazed.

10.2.1.11

WindowGlazed

Window, glazed.

10.2.1.12

Chimney

Chimney or vent.

10.2.1.13

Pit

Pit or hole.

10.2.1.14

Unspecified

Unspecified.

10.2.9

```
ExitType Type () const
```

Return type of exit.

10.2.10

```
double XCenter () const
```

Return center X coordinate.

10.2.11

```
double YCenter () const
```

Return center Y coordinate.

10.2.12

```
bool WallAligned () const
```

Return wall alignment flag.

10.2.13

```
const char * Description () const
```

Return description.

10.2.14

```
const char * Image () const
```

Return picture of exit.

10.2.15

```
const char * NextSpaceIndexString () const
```

Return next space index string.

10.2.16

```
Exit ( ExitType t = Unspecified, double x = 0.0, double y =  
0.0, bool wa = true, const char *d = "", const char *im = "",  
const char *ns = "" )
```

Arguments

10.2.16.1	ExitType	t	.....	158
10.2.16.2	double	x	.....	158
10.2.16.3	double	y	.....	158
10.2.16.4	bool	wa	.....	158
10.2.16.5	const char *	d	.....	158
10.2.16.6	const char *	im	.....	159
10.2.16.7	const char *	ns	.....	159

Constructor.

10.2.16.1

ExitType **t**

Exit type.

10.2.16.2

double **x**

X coordinate.

10.2.16.3

double **y**

Y coordinate.

10.2.16.4

bool **wa**

Wall alignment?

10.2.16.5

const char * **d**

Description.

10.2.16.6

```
const char * im
```

Picture.

10.2.16.7

```
const char * ns
```

Next space.

10.2.17

```
~Exit ()
```

Destructor.

10.2.18

```
Exit& operator = (const Exit& source)
```

Assignment operator.

10.2.2

```
ExitType type
```

Type of exit.

10.2.3

float **xCenter**

Center X coordinate.

10.2.4

float **yCenter**

Center Y coordinate.

10.2.5

bool **wallAligned**

Aligned with wall?

10.2.6

const char * **descr**

Description.

10.2.7

const char * **image**

Picture of exit.

10.2.8

```
const char * nextSpaceIndexString
```

Next space.

10.3

```
class ExitVector
```

Public Members

10.3.7	ExitVector ()	.....	162
10.3.8	~ExitVector ()	.....	162
10.3.9	void InsertExit (const Exit& source )	.....	162
10.3.10	const Exit* operator [] (int index) const	.....	163
10.3.11	const Exit* Index (int index) const	.....	163
10.3.12	const Exit* operator () (double x, double y) const	.....	164
10.3.13	const Exit* Nearest (double x, double y) const	.....	164
10.3.14	void DeleteAtIndex (int index )	.....	165
10.3.15	void DeleteNear (double x, double y )	.....	166
10.3.16	int ElementCount () const	.....	166

Private Members

10.3.1	const int initSize = 10	.....	167
10.3.2	const int growSize = 10	.....	167
10.3.3	Exit * evect	.....	167
10.3.4	int vSize	.....	167
10.3.5	int vCount	.....	167

10.3.6 int **NearestIndex** (double x, double y) const 168

Vector of Exits.

10.3.7

ExitVector ()

Constructor.

10.3.8

~ExitVector ()

Destructor.

10.3.9

void **InsertExit** (const Exit& source)

Arguments

10.3.9.1 const Exit&
 source 162

Insertion function.

10.3.9.1

const Exit& **source**

Exit object to insert.

10.3.10

```
const Exit* operator [] ( int index ) const
```

Arguments

10.3.10.lint	index	163
--------------	--------------	-------	-----

Index operator.

10.3.10.1

```
int index
```

Index.

10.3.11

```
const Exit* Index ( int index ) const
```

Arguments

10.3.11.lint	index	163
--------------	--------------	-------	-----

Index function.

10.3.11.1

```
int index
```

Index.

10.3.12

```
const Exit* operator () ( double x, double y ) const
```

Arguments

10.3.12.1	double	x	.....	164
10.3.12.2	double	y	.....	164

Select nearest to (x,y) operator.

10.3.12.1

```
double x
```

X coordinate.

10.3.12.2

```
double y
```

Y coordinate.

10.3.13

```
const Exit* Nearest ( double x, double y ) const
```

Arguments

10.3.13.1	double	x	.....	165
10.3.13.2	double	y	.....	165

Select nearest to (x,y) function.

double x

double y

```
void DeleteAtIndex ( int index )
```

int	index
-----	-------

10.3.15

```
void DeleteNear ( double x, double y )
```

Arguments

10.3.15.1	double	x	.....	166
10.3.15.2	double	y	.....	166

Delete element near coordinate.

10.3.15.1

```
double x
```

X coordinate.

10.3.15.2

```
double y
```

Y coordinate.

10.3.16

```
int ElementCount () const
```

Return element count.

10.3.1

```
const int initSize = 10
```

Initial allocation size.

10.3.2

```
const int growSize = 10
```

Growth allocation.

10.3.3

```
Exit * evec
```

Element vector.

10.3.4

```
int vSize
```

Allocated size of vector.

10.3.5

```
int vCount
```

Number of used elements.

10.3.6

```
int NearestIndex ( double x, double y ) const
```

Arguments

10.3.6.1	double	x	.....	168
10.3.6.2	double	y	.....	168

Nearest index.

10.3.6.1

```
double x
```

X coordinate.

10.3.6.2

```
double y
```

Y coordinate.

10.4

```
class Item
```

Public Members

10.4.1	enum	ItemType	.....	169
10.4.7	ItemType	Type () const	.....	171
10.4.8	double	XCenter () const	.....	171
10.4.9	double	YCenter () const	.....	171

10.4.10	const char *		
	Image () const	.....	171
10.4.11	const char *		
	Filename () const	.....	172
10.4.12	Item (ItemType t = Unspecified, double x = 0.0, double y = 0.0, const char *im = "", const char *f = "" )	.....	172
10.4.13	~Item ()	.....	173
10.4.14	Item& operator = (const Item& source)	.....	173

Private Members

10.4.2	ItemType type	.....	174
10.4.3	float xCenter	.....	174
10.4.4	float yCenter	.....	174
10.4.5	const char *		
	image	.....	174
10.4.6	const char *		
	filename	.....	174

Item in space.

10.4.1

```
enum ItemType
```

Members

10.4.1.1	Character	.....	170
10.4.1.2	Monster	.....	170
10.4.1.3	Treasure	.....	170
10.4.1.4	TrickTrap	.....	170
10.4.1.5	Dressing	.....	170
10.4.1.6	Unspecified	.....	171

Item types.

10.4.1.1

Character

Item is a Character.

10.4.1.2

Monster

Item is a Monster.

10.4.1.3

Treasure

Item is a Treasure.

10.4.1.4

TrickTrap

Item is a Trick or Trap.

10.4.1.5

Dressing

Item is some random other object.

10.4.1.6

Unspecified

Item has no specific type.

10.4.7

ItemType **Type** () const

Return type of item.

10.4.8

double **XCenter** () const

Return center X coordinate.

10.4.9

double **YCenter** () const

Return center Y coordinate.

10.4.10

const char * **Image** () const

Return image.

10.4.11

```
const char * Filename () const
```

Return file name.

10.4.12

```
Item ( ItemType t = Unspecified, double x = 0.0, double y =  
0.0, const char *im = "", const char *f = "" )
```

Arguments

10.4.12.1	ItemType	t	.....	172
10.4.12.2	double	x	.....	172
10.4.12.3	double	y	.....	173
10.4.12.4	const char *	im	.....	173
10.4.12.5	const char *	f	.....	173

Constructor.

10.4.12.1

```
ItemType t
```

Item type.

10.4.12.2

```
double x
```

X coordinate.

10.4.12.3

```
double y
```

Y coordinate.

10.4.12.4

```
const char * im
```

Image.

10.4.12.5

```
const char * f
```

File name.

10.4.13

```
~Item ()
```

Destructor.

10.4.14

```
Item& operator = (const Item& source)
```

Assignment operator.

10.4.2

`ItemType` **type**

Type of item.

10.4.3

`float` **xCenter**

Center X coordinate.

10.4.4

`float` **yCenter**

Center Y coordinate.

10.4.5

`const char *` **image**

Image.

10.4.6

`const char *` **filename**

File name.

10.5

class **ItemVector****Public Members**

10.5.7	ItemVector ( )	.....	175
10.5.8	~ItemVector ( )	.....	176
10.5.9	void InsertItem (const Item& source )	.....	176
10.5.10	const Item* operator [] (int index) const	.....	176
10.5.11	const Item* Index (int index) const	.....	177
10.5.12	const Item* operator () (double x, double y) const	.....	177
10.5.13	const Item* Nearest (double x, double y) const	.....	178
10.5.14	void DeleteAtIndex (int index )	.....	179
10.5.15	void DeleteNear (double x, double y )	.....	179
10.5.16	int ElementCount () const	.....	180

Private Members

10.5.1	const int initSize = 10	.....	180
10.5.2	const int growSize = 10	.....	180
10.5.3	Item * ivect	.....	181
10.5.4	int vSize	.....	181
10.5.5	int vCount	.....	181
10.5.6	int NearestIndex (double x, double y) const	.....	181

Vector of Items.

10.5.7

ItemVector ()

Constructor.

10.5.8

```
~ItemVector ()
```

Destructor.

10.5.9

```
void InsertItem ( const Item& source )
```

Arguments

10.5.9.1	const Item&		
	source	.....	176

Insertion function.

10.5.9.1

```
const Item& source
```

Item object to insert.

10.5.10

```
const Item* operator [] ( int index ) const
```

Arguments

10.5.10.1	int	index	177
-----------	-----	--------------	-------	-----

Index operator.

10.5.10.1

int **index**

Index.

10.5.11

const Item* **Index** (int index) const

Arguments

10.5.11.1.int	index	177
---------------	--------------	-------	-----

Index function.

10.5.11.1

int **index**

Index.

10.5.12

const Item* **operator** () (double x, double y) const

Arguments

10.5.12.1.double	x	.....	178
10.5.12.2.double	y	.....	178

Select nearest to (x,y) operator.

10.5.12.1

```
double x
```

X coordinate.

10.5.12.2

```
double y
```

Y coordinate.

10.5.13

```
const Item* Nearest ( double x, double y ) const
```

Arguments

10.5.13.1	double	x	.....	178
10.5.13.2	double	y	.....	179

Select nearest to (x,y) function.

10.5.13.1

```
double x
```

X coordinate.

10.5.13.2

double **y**

Y coordinate.

10.5.14

void **DeleteAtIndex** (int index)

Arguments

10.5.14.1	int	index	179
-----------	-----	--------------	-------	-----

Delete element by index.

10.5.14.1

int **index**

Element to delete.

10.5.15

void **DeleteNear** (double x, double y)

Arguments

10.5.15.1	double	x	.....	180
10.5.15.2	double	y	.....	180

Delete element near coordinate.

10.5.15.1

```
double x
```

X coordinate.

10.5.15.2

```
double y
```

Y coordinate.

10.5.16

```
int ElementCount () const
```

Return element count.

10.5.1

```
const int initSize = 10
```

Initial allocation size.

10.5.2

```
const int growSize = 10
```

Growth allocation.

10.5.3

Item * **ivect**

Element vector.

10.5.4

int **vSize**

Allocated size of vector.

10.5.5

int **vCount**

Number of used elements.

10.5.6

int **NearestIndex** (double x, double y) const

Arguments

10.5.6.1	double	x	.....	182
10.5.6.2	double	y	.....	182

Nearest index.

10.5.6.1

```
double x
```

X coordinate.

10.5.6.2

```
double y
```

Y coordinate.

10.6

```
class Space
```

Public Members

10.6.1	enum	SpaceShape	.....	184
10.6.13	void	UpdateFromRecord (const Record &rec)	.....	185
10.6.14		Space (SpaceShape s = Undefined, double x = 0.0, double y = 0.0, const char *n = "", const char *d = "", const char *bg = "white" )	.....	185
10.6.15		Space (const Space *that)	.....	187
10.6.16		Space (const Space &that)	.....	187
10.6.17		~Space ()	.....	187
10.6.18	operator const	Record () const	.....	188
10.6.19	SpaceShape	Shape () const	.....	188
10.6.20	SpaceShape	SetShape (SpaceShape newS)	.....	188
10.6.21	double	CenterX () const	.....	188

10.6.22 double	SetCenterX (double newX)	188
10.6.23 double	CenterY () const	189
10.6.24 double	SetCenterY (double newY)	189
10.6.25 const Exit*	NearestExit (double x, double y) const	189
10.6.26 const Exit*	IndexedExit (int index) const	190
10.6.27 int	NumberOfExits () const	190
10.6.28 void	InsertExit (const Exit& source).....	190
10.6.29 void	DeleteExitNear (double x, double y).....	191
10.6.30 void	DeleteExitAtIndex (int index)	191
10.6.31 const Item*	Nearestitem (double x, double y) const	192
10.6.32 const Item*	IndexedItem (int index) const	193
10.6.33 int	NumberOfItems () const	193
10.6.34 void	InsertItem (const Item& source).....	193
10.6.35 void	DeleteItemNear (double x, double y)	194
10.6.36 void	DeleteItemAtIndex (int index)	194
10.6.37 const char *	Name () const	195
10.6.38 const char *	SetName (const char *newN)	195
10.6.39 const char *	Description () const	195
10.6.40 const char *	SetDescription (const char *newD)	195
10.6.41 const char *	BackgroundColor () const	196
10.6.42 const char *	SetBackgroundColor (const char *newBG)	196

Private Members

10.6.2 SpaceShape

	shape	.....	196
10.6.3	double centerX	.....	196
10.6.4	double centerY	.....	196
10.6.5	ExitVector exitList	.....	197
10.6.6	ItemVector itemList	.....	197
10.6.7	const char * name	.....	197
10.6.8	const char * descr	.....	197
10.6.9	const char * bgcolor	.....	197
10.6.10	Record rawData	.....	198
10.6.11	void RecordToSpace ()	.....	198
10.6.12	void UpdateRecord ()	.....	198

Basic Space class.

10.6.1

```
enum SpaceShape
```

Members

10.6.1.1	Square	.....	184
10.6.1.2	Hexagon	.....	185
10.6.1.3	Undefined	.....	185

Space shape.

10.6.1.1

```
Square
```

Square.

10.6.1.2

Hexagon

Hexagon.

10.6.1.3

Undefined

Undefined shape.

10.6.13

void UpdateFromRecord (const Record &rec)

Update Space from Record.

10.6.14

Space (SpaceShape s = Undefined, double x = 0.0, double y = 0.0, const char *n = "", const char *d = "", const char *bg = "white")

Arguments

10.6.14.1	SpaceShape		
	s	.....	186
10.6.14.2	double	x	..... 186
10.6.14.3	double	y	..... 186

10.6.14.4	const char *	n	.....	186
10.6.14.5	const char *	d	.....	187
10.6.14.6	const char *	bg	.....	187

Constructor.

10.6.14.1

SpaceShape **s**

Shape.

10.6.14.2

double **x**

Center point X coordinate.

10.6.14.3

double **y**

Center point y coordinate.

10.6.14.4

const char * **n**

Name of the space.

10.6.14.5

```
const char * d
```

Description of the space.

10.6.14.6

```
const char * bg
```

Background color of the space.

10.6.15

```
Space (const Space *that)
```

Copy constructor (from pointer).

10.6.16

```
Space (const Space &that)
```

Copy constructor (from reference).

10.6.17

```
~Space ()
```

Destructor.

10.6.18

```
operator const Record () const
```

Type conversion: convert to a Record.

10.6.19

```
SpaceShape Shape () const
```

Return this space's shape.

10.6.20

```
SpaceShape SetShape (SpaceShape newS)
```

Set the shape.

10.6.21

```
double CenterX () const
```

Return this space's center point X coordinate.

10.6.22

```
double SetCenterX (double newX)
```

Set the space's center point X coordinate.

10.6.23

```
double CenterY () const
```

Return this space's center point Y coordinate.

10.6.24

```
double SetCenterY (double newY)
```

Set the space's center point Y coordinate.

10.6.25

```
const Exit* NearestExit ( double x, double y ) const
```

Arguments

10.6.25.1	double	x	.....	189
10.6.25.2	double	y	.....	190

Return the nearest exit.

10.6.25.1

```
double x
```

X coordinate.

10.6.25.2

```
double y
```

Y coordinate.

10.6.26

```
const Exit* IndexedExit ( int index ) const
```

Arguments

10.6.26.1	int	index	190
-----------	-----	--------------	-------	-----

Return the ith exit.

10.6.26.1

```
int index
```

Index.

10.6.27

```
int NumberOfExits () const
```

Return the count of exits.

10.6.28

```
void InsertExit (const Exit& source)
```

Insert an exit.

10.6.29

```
void DeleteExitNear ( double x, double y )
```

Arguments

10.6.29.1	double	x	.....	191
10.6.29.2	double	y	.....	191

Delete exit nearest to x,y.

10.6.29.1

```
double x
```

X coordinate.

10.6.29.2

```
double y
```

Y coordinate.

10.6.30

```
void DeleteExitAtIndex ( int index )
```

Arguments

10.6.30.1	int	index	192
-----------	-----	--------------	-------	-----

Delete exit by index.

10.6.30.1

int **index**

Element to delete.

10.6.31

const Item* **Nearestitem** (double x, double y) const

Arguments

10.6.31.1	double	x	.....	192
10.6.31.2	double	y	.....	192

Return the nearest item.

10.6.31.1

double **x**

X coordinate.

10.6.31.2

double **y**

Y coordinate.

10.6.32

```
const Item* IndexedItem ( int index ) const
```

Arguments

10.6.32.int	index	193
-------------	--------------	-------	-----

Return the ith item.

10.6.32.1

```
int index
```

Index.

10.6.33

```
int NumberOfItems () const
```

Return the count of items.

10.6.34

```
void InsertItem (const Item& source)
```

Insert an item.

10.6.35

```
void DeleteItemNear ( double x, double y )
```

Arguments

10.6.35.1	double	x	.....	194
10.6.35.2	double	y	.....	194

Delete item nearest to x,y.

10.6.35.1

```
double x
```

X coordinate.

10.6.35.2

```
double y
```

Y coordinate.

10.6.36

```
void DeleteItemAtIndex ( int index )
```

Arguments

10.6.36.1	int	index	195
-----------	-----	--------------	-------	-----

Delete item by index.

10.6.36.1

```
int index
```

Element to delete.

10.6.37

```
const char * Name () const
```

Return the name of the space.

10.6.38

```
const char * SetName (const char *newN)
```

Set the name of the space.

10.6.39

```
const char * Description () const
```

Return the description of the space.

10.6.40

```
const char * SetDescription (const char *newD)
```

Set the description of the space.

10.6.41

```
const char * BackgroundColor () const
```

Return background color of the space.

10.6.42

```
const char * SetBackgroundColor (const char *newBG)
```

Set the background color of the space.

10.6.2

```
SpaceShape shape
```

Space shape.

10.6.3

```
double centerX
```

Center point X coordinate.

10.6.4

```
double centerY
```

Center point Y coordinate.

10.6.5

ExitVector **exitList**

List of exits.

10.6.6

ItemVector **itemList**

List of items.

10.6.7

const char * **name**

Name of the space.

10.6.8

const char * **descr**

Description of the space.

10.6.9

const char * **bgcolor**

Background color of the space.

10.6.10

Record **rawData**

Internal storage of the space.

10.6.11

void **RecordToSpace** ()

Record to Space.

10.6.12

void **UpdateRecord** ()

Update Record.

References

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Class Graph

3.1 RandomInteger	20
3.2 Dice	22
4 Record	26
5 Character	29
6 Monster	58
6.25 Range	.....	93
7 MonsterInstance	.....	103

8 Spell	.....	106
8.11 FlagBits	.....	117
9.1 Treasure	.....	121
9.2 TrickTrap	.....	137
9.3 Dressing	.....	143
10.1 GeoConstants	.....	150
10.2 Exit	.....	151
10.3 ExitVector	.....	161
10.4 Item	.....	168

<div>10.5</div> <div>ItemVector</div>	.....	175
<div>10.6</div> <div>Space</div>	.....	182