Starcraft Environment Manual

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Contents

Chapter 1

Percepts

This section will list all the percepts that are usable in the Starcraft environment. The percepts vary per unit, for example: an attacking unit will not percept the amount of resources available to the player as he does not need them. For the implementation of these percepts in your GOAL code, please refer to the GOAL manual.

1.1 Percepts for all units

These percepts are available to all the units and buildings.

1.1.1 Available Resources

Resources percept

Description	The amount of minerals, gas and supply available to the player. NOTE: supply is multiplied by 2, so 10 supply in game corresponds with 20 supply in the environment.
Type	send on change
Syntax	resources(<M>, <G>, <CS>, <TS>)
Parameters	<M> : The amount of minerals available to the player. <G> : The amount of gas available to the player. <CS>: The currently used supply of the player. <TS>: The total amount of supply the player can currently use.

1.1.2 Unit Information

Self percept

Description	The (unique) ID of the unit and it's unittype.
Type	Send once
Syntax	self(<ID>, <UnitType>)
Parameters	<ID> : The id of the unit. <UnitType> : The unittype of the unit.

Status percept

Description	The current amount of health, shield and position of the unit
Type	Send on change
Syntax	status(<H>, <S>, <X>, <Y>)
Parameters	<H> : The current amount of health of the unit. <S> : The current amount of shields of the unit. <X> : The x-coordinate of the unit in the map. <Y> : The y-coordinate of the unit in the map.

Condition percept

Description	The current condition of the unit.
Type	Send on change
Syntax	condition(<List>)
Parameters	<List> : The list of conditions. The list can contain the following values: idle, beingConstructed, cloaked, moving, following, loaded, stimmed, sieged.

Energy percept

Description	The current and total amount of energy of the unit.
Type	Send on change
Syntax	energy(<C>, <T>)
Parameters	<C> : The current amount of energy of the unit. <T> : The total amount of energy of the unit.

1.1.3 Player Percepts

Enemy Race percept

Description	Perceives all enemy races.
Type	Send once
Syntax	enemyRace(<Race>)
Parameters	<Race> : The enemy race (Protoss, Zerg, Terran or Unknown if random).

1.1.4 Map Percepts

Map percept

Description	Perceives the width and the height of the map.
Type	Send once
Syntax	map(<Width>,<Height>)
Parameters	<Width>: The width of the map. <Height>: The height of the map.

Base percept

Description	Perceives the base locations present on the map.
Type	Send once
Syntax	base(<X>,<Y>,<IsStart>,<RegionID>)
Parameters	<X>: The x-coordinate of the base location. <Y>: The y-coordinate of the base location. <IsStart>: Indicates whether the location is a starting location or not. Can take values: true or false. <RegionID>: The ID of the region this location is in.

Chokepoint percept

Description	Perceives the chokepoints present on the map.
Type	Send once
Syntax	chokepoint(<X>,<Y>)
Parameters	<X>: The x-coordinate of the chokepoint. <Y>: The y-coordinate of the chokepoint.

1.1.5 Unit percepts

Unit percept

Description	Perceives all units that are currently visible to the player.
Type	Send always
Syntax	unit(<IsFriendly>,<Type>,<ID>,<Health>,<Shield>,<IsFlying>,<X>,<Y>)
Parameters	<IsFriendly>: Indicates whether the unit is friendly or not (true or false). <Type>: The unittype of the unit. <ID>: The ID of the unit. <Health>: The current amount of health of the unit. <Shields>: The current amount of shield of the unit. <IsFlying>: Indicates whether the unit can fly or not (true or false). <X>: The x-coordinate of the unit. <Y>: The y-coordinate of the unit.

IsMorphing percept

Description	Perceives all morphing units.
Type	Send always
Syntax	isMorphing(<Type>, <ID>)
Parameters	<Type>: The unittype of the unit <ID>: The (unique) ID of the unit.

Attacking percept

Description	Perceives which units are attacking and which unit they are attacking
Type	Send always
Syntax	attacking(<ID>,<TargetID>)
Parameters	<ID>: The ID of the unit which is attacking. <TargetID>: The (unique) ID of the targeted unit which is being attacked.

IsCloaked percept

Description	Perceives which units are cloaked.
Type	Send always
Syntax	isCloaked(<Type>,<ID>)
Parameters	<Type>: The unittype of the unit <ID>: The (unique) ID of the unit

1.2 Building percepts

These percepts are available to buildings.

1.2.1 Research and Upgrade percepts

HasResearched percept

Description	Perceives the researched techtypes of the player.
Type	send once
Syntax	hasResearched(<TechType>)
Parameters	<TechType>: The researched techtype.

Upgrading percept

Description	Perceives when the building is upgrading.
Type	Send always
Syntax	upgrading(<UpgradeType>)
Parameters	<UpgradeType>: The name of the upgrade.

1.2.2 Production Buildings

Queue Size percept

Description	Perceives how many units are in queue of the building structure.
Type	Send on change
Syntax	queueSize(<Size>)
Parameters	<Size>: The size of the current queue.

Rally point percept

Description	The position of the rally point.
Type	Send on change
Syntax	rallyPoint(<X>,<Y>)
Parameters	<X>,<Y>: The coordinates of the rally point.

Rally unit percept

Description	The unit the rally point points to.
Type	Send on change
Syntax	rallyUnit(<Unit>)
Parameters	<Unit>: The unit the rally point points to.

1.2.3 Loadable Buildings

SpaceProvided percept

Description	Perceives how many units are currently loaded in the building and how many units can be loaded in the building.
Type	Send on change
Syntax	spaceProvided(<CSize>, <TSize>)
Parameters	<CSize>: The amount of currently loaded units . <TSize>: The total amount of units that can be loaded.

Unitloaded percept

Description	Perceives which unit is loaded in the building.
Type	Send always
Syntax	unitLoaded(<ID>, <Type>)
Parameters	<ID>: The ID of the loaded unit. <Type>: The type of the loaded unit.

1.2.4 Terran building percepts

Condition percept

Description	The current condition of the building.
Type	Send on change
Syntax	condition(<List>)
Parameters	<List> : The list of conditions. The list can contain the following values: lifted, <addonName>.

1.3 Worker percepts

These percepts are available to Workers.

1.3.1 Worker Management

Worker Activity percept

Description	Perceives the current activity of all workers.
Type	Send always
Syntax	workerActivity(<ID>, <Activity>)
Parameters	<ID>: The ID of the worker. <Activity>: The current activity of the worker. Can take values: gatheringGas, gatheringMinerals, constructing or idling.

1.3.2 Terran Percepts

Requires Repair percept

Description	Indicates which mechanical units can be repaired.
Type	Send always
Syntax	requiresRepair(<Unit>)
Parameters	<Unit>: The mechanical unit which can be repaired.

1.3.3 Builder Percepts

Vespene Geyser percept

Description	Perceives a vespene geyser on the map.
Type	Send on change
Syntax	vespeneGeyser(<ID>,<Resources>,<ResourceGroup>,<X>,<Y>)
Parameters	<ID>: The ID of the geyser. <Resources>: The amount of resources left in the geyser. <ResourceGroup>: The resource group. <X>: The x-coordinate of the vespene geyser. <Y>: The y-coordinate of the vespene geyser.

ConstructionSite percept

Description	Perceives all construction sites on the map, which are explored and not obstructed.
Type	Send always
Syntax	constructionSite(<X>,<Y>)
Parameters	<X>: The x-coordinate of the construction site. <Y>: The y-coordinate of the construction site.

1.3.4 Worker conditions

Condition percept

Description	The current condition of the worker unit.
Type	Send on change
Syntax	condition(<List>)
Parameters	<List> : The list of conditions. The list can contain the following values: gathering, carrying, constructing.

Chapter 2

Actions

This section will list all the actions that are usable in the Starcraft environment.

2.1 Attack action

Desription	Attack a unit or building.
Syntax	attack(<TargetID>)
Parameters	<TargetID>: The ID of the target that has to be attacked.
Effects	If the unit is attack capable, attack the target.

2.2 Attack move action

Desription	Go to a location and attack everything you encounter.
Syntax	attack(<X>,<Y>)
Parameters	<X>,<Y>: The coordinates to move to.
Effects	Go to a location and attack every enemy encountered if a unit can move and is attack capable.

2.3 Upgrade action

Desription	Upgrade an upgrade.
Syntax	upgrade(<UpgradeName>)
Parameters	<UpgradeName>: The name of the upgrade you want to upgrade.
Effects	Buy an upgrade.

2.4 Build action

Desription	Build a building.
Syntax	build(<Type>,<X>,<Y>)
Parameters	<Type>: The Type of the building that has to be built. <X>,<Y>: The coordinates to build on.
Effects	Build a building at the location specified if this unit is capable to do so.

2.5 Gather action

Desription	Instruct a unit to gather a resource.
Syntax	gather(<ID>)
Parameters	<ID>: The ID of the resource to gather.
Effects	The unit starts gathering the resource if this unit is capable to do so.

2.6 Move action

Desription	Instruct a unit to move to a location.
Syntax	move(<X>,<Y>)
Parameters	<X>,<Y>: The coordinates to move to.
Effects	Go to a location if a unit can move.

2.7 Train action

Desription	Train a unit from a building.
Syntax	train(<Type>)
Parameters	<Type>: The type of unit to train.
Effects	If a unit can be built from this building, train the unit if there are enough resources.

2.8 Stop action

Desription	Stop a unit.
Syntax	stop
Effects	Stops this unit from doing what he is doing.

2.9 Ability action

Desription	use an (researched) ability.
Syntax	use(<Type>)
Parameters	<Type>: The type of technology to use.
Effects	If this unit can use the tech and it is researched, use the technology.

2.10 Ability on target action

Desription	use an (researched) ability on a target.
Syntax	use(<Type>, <Target>)
Parameters	<Type>: The type of technology to use. <Target>: The target to use the technology on.
Effects	If this unit can use the tech and it is researched, use the technology on the target.

2.11 Ability on location action

Desription	use an (researched) ability on a location.
Syntax	use(<Type>, <X>, <Y>)
Parameters	<Type>: The type of technology to use. <X>,<Y>: The coordinates to use the technology on.
Effects	If this unit can use the tech and it is researched, use the technology on the location.

2.12 Research action

Desription	Research a technology.
Syntax	research(<Type>)
Parameters	<Type>: The type of technology to research.
Effects	If this building can research this tech, research the technology.

2.13 Set rally point action

Desription	Set the rally point of a building.
Syntax	setRallyPoint(<X>, <Y>)
Parameters	<X>,<Y>: The coordinates to set the rally point to.
Effects	If this unit can set a rally point, set it to the specified location.

2.14 Set rally point to unit action

Desription	Set the rally point of a building.
Syntax	setRallyPoint(<Unit>)
Parameters	<Unit>: The unit to set the rally point to.
Effects	If this unit can set a rally point, set it to the specified unit.

2.15 Lift action

Desription	Lift a building.
Syntax	lift
Effects	The building starts flying.
Note	Only for Terran buildings.

2.16 Land action

Desription	Land the unit.
Syntax	land(<X>, <Y>)
Parameters	<X>,<Y>: The coordinates to land on.
Effects	If the unit is lifted, land the unit on the location.
Note	The location has to be visible.

2.17 Siege action

Desription	Order a tank to go in siege mode.
Syntax	siege
Effects	The tank enters siege mode.
Note	Only for Terran Siege Tank.

2.18 Unsiege action

Desription	Order a tank to go out of siege mode.
Syntax	unsiege
Effects	The tank exits siege mode.
Note	Only for Terran Siege Tank.

2.19 Build addon action

Desription	Order a building to build an addon.
Syntax	buildAddon(<Name>)
Parameters	<Name>: The name of the addon.
Effects	The building builds an addon
Note	Only for Terran buildings.

2.20 Load action

Desription	Order a unit to load this unit.
Syntax	load(<ID>)
Parameters	<ID>: The ID of the unit to load in this unit.
Effects	The unit loads another unit

2.21 RightClick action

Desription	Order a building to build an addon.
Syntax	rightClick(<ID>) or rightClick(<X>,<Y>)
Parameters	<ID>: The ID of a unit. <X>,<Y>: A position.
Effects	The unit rightclicks

Chapter 3

TechTypes

Here is a list of technology types that can be researched and used.

Stim Packs
Lockdown
EMP Shockwave
Spider Mines
Scanner Sweep
Tank Siege Mode
Defensive Matrix
Irradiate
Yamato Gun
Cloaking Field
Personnel Cloaking
Burrowing
Infestation
Spawn Broodlings
Dark Swarm
Plague
Consume
Ensnare
Parasite
Psionic Storm
Hallucination
Recall
Stasis Field
Archon Warp

Restoration
Disruption Web
Mind Control
Dark Archon Meld
Feedback
Optical Flare
Maelstrom
Lurker Aspect
Healing

Chapter 4

UpgradeTypes

Here is a list of upgrade types that can be researched.

Terran Infantry Armor
Terran Vehicle Plating
Terran Ship Plating
Zerg Carapace
Zerg Flyer Carapace
Protoss Ground Armor
Protoss Air Armor
Terran Infantry Weapons
Terran Vehicle Weapons
Terran Ship Weapons
Zerg Melee Attacks
Zerg Missile Attacks
Zerg Flyer Attacks
Protoss Ground Weapons
Protoss Air Weapons
Protoss Plasma Shields
U 238 Shells
Ion Thrusters
Titan Reactor
Ocular Implants
Moebius Reactor
Apollo Reactor
Colossus Reactor
Ventral Sacs

Antennae
Pneumatized Carapace
Metabolic Boost
Adrenal Glands
Muscular Augments
Grooved Spines
Gamete Meiosis
Metasynaptic Node
Singularity Charge
Leg Enhancements
Scarab Damage
Reaver Capacity
Gravitic Drive
Sensor Array
Gravitic Boosters
Khaydarin Amulet
Apial Sensors
Gravitic Thrusters
Carrier Capacity
Khaydarin Core
Argus Jewel
Argus Talisman
Caduceus Reactor
Chitinous Plating
Anabolic Synthesis
Charon Boosters