

## Introduction to AIs

Although the abbreviation **AI** stands for **Artificial Intelligence**, the way the computer players are controlled in WarCraft2 is more a set of **Accumulated Instructions** as you will see soon :)

The original CD *Tides of Darkness* comes with 32 different AIs, the expansion set *Beyond the Dark Portal* increases this number to 83. Most of these are specifically designed for a single level, 4 are for general purposes (these are the ones you can set with the Map-Editor: *Land, Sea, Air Attack* and *Passive*). You can easily determine what AI's a level uses by extracting it from MAINDAT.WAR, loading it into the Map-Editor and looking at the *Player properties*.

Each AI consists of three parts:

- A control program
- An items- (or build-) table
- A rate control-table

Let's start with the two tables.

The **items-table** is just a list of everything the computer will "build". That includes constructing buildings, upgrading units (also the Townhall-upgrades) and learning spells. The computer will build items in the same order as they appear in the table automatically.

The **rate control-table** defines the rate of producing certain classes of units, upgrades and spells.

The lower the value, the faster the job will be accomplished. In fact, when the computer wants to build something it first waits for the amount of time in the rate control-table. Once this time has passed it starts building. (By the way, I'll call the time-units **ticks**)

Now to the **control program**:

It controls the amount of units, when to build items and when and how to attack. This is accomplished by setting different variables. The best way to understand AI programs is to look at the original AIs, using the [AI-Viewer](#).

Setting the number of units:

The program tells how much of each unit-type should be produced. The computer always tries to maintain this number - if units die, it will train new ones, until the specified number is reached again.

Note: although the number of *Demolition Squads/Sappers* can be set, the computer never trains them.

Controlling the building of items:

When explaining the items-table I said that the computer will automatically build these items. However the control program can set a *maxitem* number - only the items up to this number will be produced (until the number is increased later in the program). Typically *maxitem* is set to 0 at the start of most programs, so nothing will be built until later in the program *maxitem* is increased.

Note: it is not necessary to build a Townhall and Farms, although it can be done. If the computer starts out with no Townhall it will automatically build one, and it also automatically builds Farms when necessary.

Waiting for certain events:

The control program can wait for something to complete, before proceeding. There are 7 different events to wait for:

1. Peasants complete - suspends the program until the set number of peasants/peons is reached.
- 2.,3.,4. Attack group complete - see *Attacking* below.
5. Keep complete - waits until the computer has at least one keep/stronghold.
6. Castle complete - waits until the computer has at least one castle/fortress.
7. There is a seventh type - used only in AI "Human 11". I don't know what it does.

Attacking:

Attacks involve 4 steps:

1. Setting the number of attack groups.
2. Setting the number of units in each attack group.
3. Waiting until the group(s) are complete.
4. Launching the attack.

All 4 steps differentiate between land-, sea- and air-attacks.

Here's a typical example for attacking with 5 land-units:

```
ptys_land = 1      ; Number of land attack parties
size_land = 5      ; Size of land attack groups
wait_land         ; Wait until land attack group is complete
atk_land          ; Start land attack
```

The size of the attack groups can also be used to specify a number of defenders to stay at home.  
To attack with 5 land-units and leave 2 behind to guard the town:

```
ptys_land = 1      ; Number of land attack parties
size_land = 7      ; Plan 7 fighters
wait_land         ; Wait until land attack group is complete
size_land = 5      ; we now have 7, but only 5 will attack => 2 stay in town
atk_land          ; Start land attack
```