# the zoidberg engine

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## AI Script Bytecode

AI scripts are parsed into bytecode by the Maker program. The AI is broken down into *events* that would trigger a subroutine of bytecode execution.

### AI Events

The following events will trigger a block AI script bytecode to be executed:

- Villain sees a hero
- Villain is shot at by hero
- Villain sees another Villain
- etc.
- Idle -- none of the above

For all events, the subsequent bytecode has access to several variables:

- Nearest Hero's
  - position
  - velocity
  - acceleration
  - score
  - health
  - lives
  - etc.

### Operations

- Look in direction
- Move in direction
- Jump in direction
- Shoot in direction
- Run in direction
- Wait for time
- etc.

### Bytecode layout

The bytecode is a one-byte string where the first 8 bits is the operation (allowing for up to 255 different operations), then the following 8 + 16 bits will specify arguments to that operation.

```
Type 1: [   Op  ][ Arg1 ][    Arg2      ]
Type 2: [   Op  ][    Arg2      ][ Arg1 ]
Type 3: [   Op  ][           Arg         ]
```

In the ZEG file, the event code blocks will be separated with identifier bytes that tell the engine that a new section is beginning. These blocks will be structured like the following:

```
11111111[Event#]
```

The first 8 bits correspond to Op 255 which is reserved for an event block designation. The following 8 bits indicate which event the following code block corresponds to.

#### See Also

ZEG datafile
Cine Script Bytecode