# Game Dev: CVars

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```
     A     cl_maxpackets "30"
U    A     rate "16000"
     A     com_maxfps "85"
     AL    com_hunkmegs "512"
     A     weapmodes_save "00000110220000020002"
     A     raceblue "2"
     A     racered "2"
     A     s_doppler "1"
     A     s_khz "22"
     A     s_musicvolume "0.5"
     A     s_volume "0.8"
           rconpassword ""
U          password ""
U    A     name "UrT_Player"
     A     in_mouse "-1"
     A     cl_alttab "1"
     A     win_fastmodechange "1"
     A     record_demo "vstr record_demo_start"
     A     record_demo_stop "set record_demo vstr record_demo_start; stoprecord"
     A     record_demo_start "set record_demo vstr record_demo_stop; recorddemo"
     I     journal "0"
     I     fs_game "q3ut4"
     I     fs_homepath "/Users/andy/Library/Application Support/Quake3"
     I     use_defaultHomePath "1"
     I     fs_basegame ""
     I     fs_basepath "/Applications/UrbanTerror4.2"
           fs_debug "0"
     AL    com_zoneMegs "32"
  R        sv_cheats "1"

546 total cvars
546 cvar indexes
]/screenshotjpeg
```

CryEngine CVar Menu

## Console Variables

Search

| Variable | Value | Description | Type |
|---|---|---|---|
| AICollisions.dmgFactorWhenCollidedByObject | 1 | generic multiplier applied to the dmg calculated wh... | Floating point |
| AICollisions.minMassForFallAndPlay | 5 | Min collision mass that can cause a fall and play | Floating point |
| AICollisions.minSpeedForFallAndPlay | 10 | Min collision speed that can cause a fall and play | Floating point |
| AICollisions.showInLog | 0 | Logs collisions ( 0=no Log, 1=Only collisions with d... | Integer |
| CV_r_AntialiasingModeEditor | 1 | Sets antialiasing modes to editing mode (disables ... | Integer |
| ExitOnQuit | 1 | | Integer |
| MemInfo | 0 | Display memory information by modules 1=on, 0=off 0/x=refresh rate in milliseconds | Integer |
| MemStats | 0 | Use 1000 to switch on and 0 to switch off Usage: MemStats [0..] | Integer |
| MemStatsMaxDepth | 4 | | Integer |
| MemStatsThreshold | 32000 | | Integer |
| STAP_DEBUG | 0 | Enable STAP Debug Rendering | Integer |
| STAP_DISABLE | 0 | Disable torso orientation | Integer |
| STAP_LOCK_EFFECTOR | 0 | Lock the STAP Effector Joint | Integer |
| STAP_MF_All | 1 | | Floating point |
| STAP_MF_Back | 1 | | Floating point |
| STAP_MF_Down | 1 | | Floating point |

Import...   Export...

CryEngine CVar Menu

Half Life 2 Console with CVars
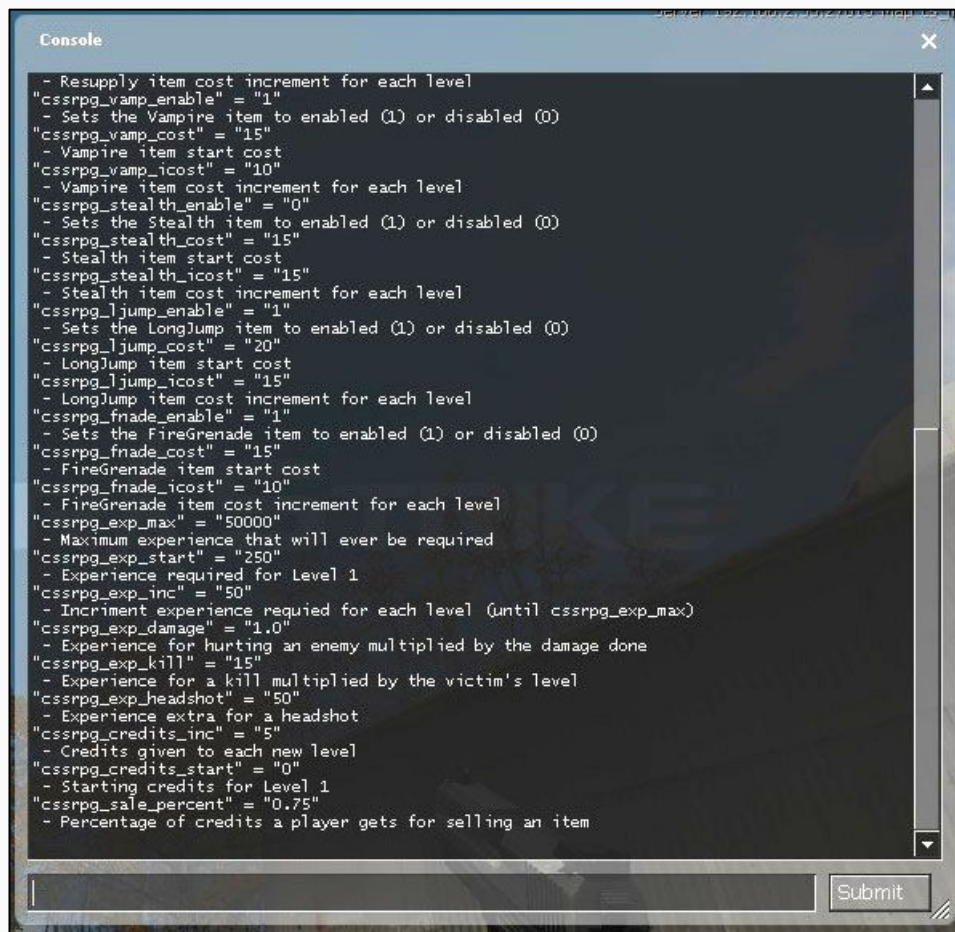
# Console **Var**iables

- Once the console concept seemed successful

- Console variable (or CVars) took the focus since allowed easy game setup and live configuration, specially for designers

- In fact, config files was just a list of console command lines setting cvars

- CVars "scripts" were a way for developers and modders to group settings

- Current settings could be saved to a file and later reproduced

- Modders created new commands and CVars

# Implementation

- Main challenge for a CVar is that it stores many different types!
  - *Suggestion*: store it as a string and transform it every time you need to read it
- Create a class for a CVar and allow the Console Module to create them
- Each module should be able to create its own CVars
- When those CVars are changed by the user, a callback must be called
- Some other CVar properties:
  - Read-only, Min/Max, Default Value

# CVar Commands

- The console should allow:
  - List all cvars and count them
  - List all cvars containing a text
  - Read the value of a CVar
  - Change the value of a CVar
  - Create a new user CVar
- Find a good reference [here](#)
- When many cvars exist, you can group them like *"render.vsync"*

# Homework

1. Create a CVar class

2. Create console commands to manipulate CVars

3. Allow other modules to generate CVars and receive callbacks on change

4. Allow config.xml to store console commands for direct execution

5. Create the following cvars:

   a. **render.vsync [0|1]** *Sets vsync to true/false*

   b. **app.maxfps [0-120]** *Caps framerate. On zero, no cap.*

```
...
<console>
  render.vsync=0
  app.maxfps=15
</console>
</config>
```