Game Development
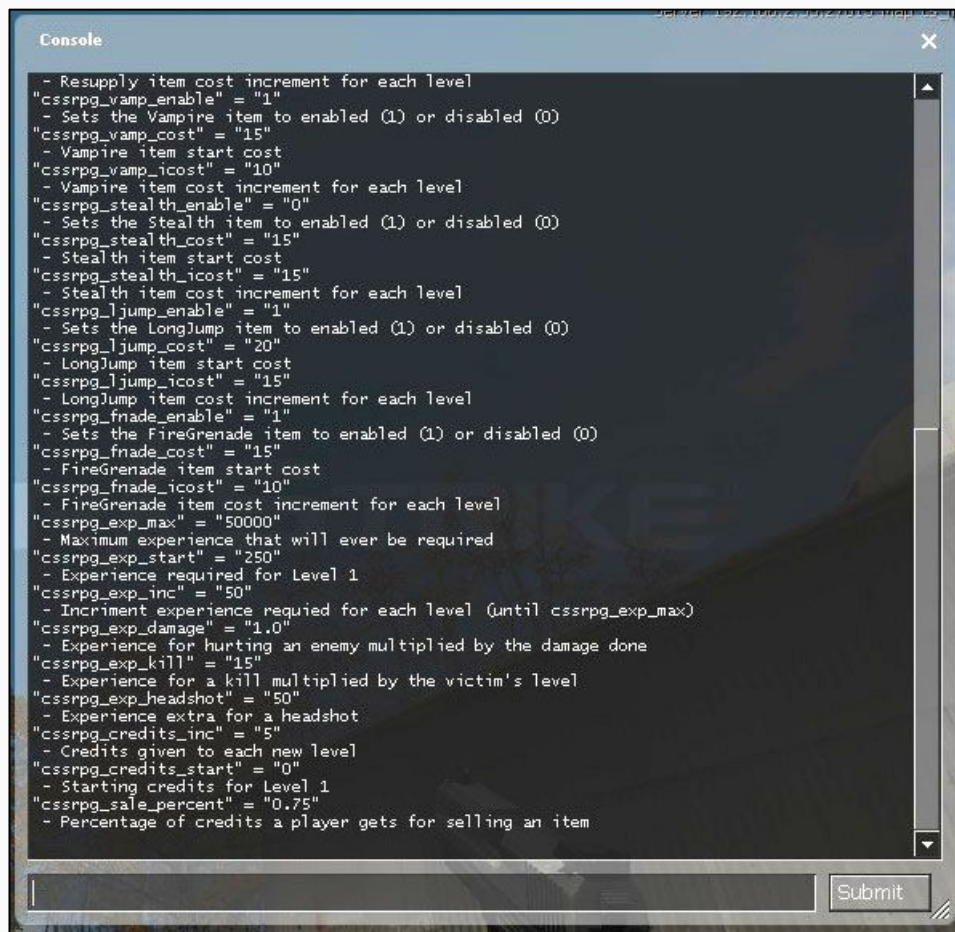
CVars

```
   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

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

```
- Resupply item cost increment for each level
"cssrpg_vamp_enable" = "1"
 - Sets the Vampire item to enabled (1) or disabled (0)
"cssrpg_vamp_cost" = "15"
 - Vampire item start cost
"cssrpg_vamp_icost" = "10"
 - Vampire item cost increment for each level
"cssrpg_stealth_enable" = "0"
 - Sets the Stealth item to enabled (1) or disabled (0)
"cssrpg_stealth_cost" = "15"
 - Stealth item start cost
"cssrpg_stealth_icost" = "15"
 - Stealth item cost increment for each level
"cssrpg_ljump_enable" = "1"
 - Sets the LongJump item to enabled (1) or disabled (0)
"cssrpg_ljump_cost" = "20"
 - LongJump item start cost
"cssrpg_ljump_icost" = "15"
 - LongJump item cost increment for each level
"cssrpg_fnade_enable" = "1"
 - Sets the FireGrenade item to enabled (1) or disabled (0)
"cssrpg_fnade_cost" = "15"
 - FireGrenade item start cost
"cssrpg_fnade_icost" = "10"
 - FireGrenade item cost increment for each level
"cssrpg_exp_max" = "50000"
 - Maximum experience that will ever be required
"cssrpg_exp_start" = "250"
 - Experience required for Level 1
"cssrpg_exp_inc" = "50"
 - Incriment experience requied for each level (until cssrpg_exp_max)
"cssrpg_exp_damage" = "1.0"
 - Experience for hurting an enemy multiplied by the damage done
"cssrpg_exp_kill" = "15"
 - Experience for a kill multiplied by the victim's level
"cssrpg_exp_headshot" = "50"
 - Experience extra for a headshot
"cssrpg_credits_inc" = "5"
 - Credits given to each new level
"cssrpg_credits_start" = "0"
 - Starting credits for Level 1
"cssrpg_sale_percent" = "0.75"
 - Percentage of credits a player gets for selling an item
```

Console

Submit

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, Default Value, Description

CVar Commands

- The console should allow:
  - List all cvars and count them
  - Search all cvars containing a text
  - Read the value of a CVar
  - Change the value of a 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. **god_mode [0|1]**

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

   c. **music.audio [0..1]**

```
...
<console>
  render.vsync=0
  parse 'my_confg.txt'
  bind f5 'god_mode 1'
</console>
</config>
```