Instrumentalmusik und Live-Elektronik

LVA 17.0078

Week 2

MAKING SOUND

- Mathematical functions (e.g. sine wave)
- Play back / modify audio files (.wav files)
- Physical modeling algorithms (e.g. Karplus-Strong)

boolean logic

notx	x	y	and	or
F	T	T	T	T
F	T	F	F	T
T	F	T	F	T
T	F	F	F	F

```
// chuck logical operators
<<<"AND">>>;
<<<true && true>>>;
<<<true && false>>>;
<<<"OR">>>;
<<<false || false>>>;
<<<true || false>>>;
```

integers can be used as Boolean variable in chuck. They are always true unless the value is 0.

```
500 => int x;

if (x) {
<<<"hi">>>;

} else {
<<<"I'm in the else portion">>>;
```

mathematical functions

Std and Math libraries:

http://chuck.cs.princeton.edu/doc/program/stdlib.html

```
Std.rand2f(0, 1) => float f;
if (f < .2) {
    <<< "Welcome to imle!">>>;
} else {
    <<< "Something else">>>;
}
```

A synth example using random numbers:

```
Impulse i => dac;
440 => float f;
0 => int t;
while (true) {
    Math.sin (2 * pi * f * t/44100) => i.next;
    t++;
1::samp => now;
}
```

sampling

Play back .wav files/ sampling pre-recorded sounds

Use SndBuf

```
SndBuf buf => dac;
"filename" => buf.read; //load the file
while (true) {
    0 => buf.pos;
    Math.rand2f(.5,1.5) => buf.rate;
    100:: ms => now;
}
```

physical modeling

Physical modeling/ STK instruments in chucK

http://chuck.cs.princeton.edu/doc/program/ugen_full.html

Two main types of STK instruments
1. those that fade on their own (plucked strings, percussion)
2. those that produce continual tone (wind instruments, bowed strings)

Use noteOff to turn off continual tone instruments (less abrupt and clicky than letting time run out or disconnecting from dac by m =< dac;) Number you chuck to noteOff doesn't generally make a difference.

```
Mandolin m => dac;

1 => m.noteOn;//without this, it will be quiet, since string hasn't
been plucked

200 => m.freq;

1.0 :: second => now;
```

Assignment 2 (10 points)

Due: Wed. March 20 at 3.00 PM

Create a minute composition using sndbuf. Your program should use .rate function for control. Try to build a rhythmic pattern that is not the same as the original files using modulo %. Have fun with it.

Please submit your assignment via email to goudarzi at iem dot at. Please only submit one chuck file saved as “FirstnameLastname_1.ck”.

The grading criteria:

- sonic aesthetics
- well commented
- use of sndbuf, .rate, and modulo

kulork (kunst uni laptop orkestra)

let's get started

if you can't run chuck from command line yet, check out: http://chuck.cs.princeton.edu/doc/build/

In **MacOS X**: in Terminal, go to the bin/ directory and type:

```
%> sudo cp chuck /usr/bin/
   (enter your password when prompted)
%> sudo chmod 755 /usr/bin/chuck
```

On **Windows**: put bin\chuck.exe in c:\windows\system32\. To run under windows: use start->run: cmd (or use cygwin)

download hemitest01 and 02 and breeze.ck from the website and let's check the gear in the class.

http://iaem.at/kurse/sommer-13/imle/week-2/code/