Microsoft Visual Studio Debug

Sorry, Were You Saying Something?

Week 11

```
C:\Users\brend\source\repos\VGATestProject\x64\Release\VGATestProject.exe (process 70484) exited with code 0.
Press any key to close this window . . .
```

Rendering Graphics in the Terminal and the Dark Arts of C++ Forum

CPU Clock

Microsoft Visual Studio Debug

CPU Cycle

Registers

RAM

15	10		

Head

Operations | F0>0 | F1>1 | 0+1 | S1>3 | CL1 | CL2

C:\Users\brend\source\repos\VGATestProject\x64\Release\VGATestProject.exe (process 70484) exited with code 0.
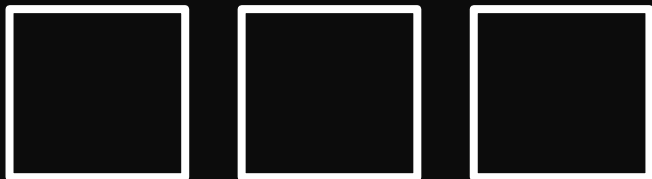Press any key to close this window . . .

CPU Cycle

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CPU Cycle

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CPU Cycle

Registers

15	10	

RAM

15	10		

Head

Operations   F0>0   F1>1   **0+1**   S1>3   CL1   CL2

CPU Cycle

Registers

25	10	

15	10		

Head

Operations	F0>0	F1>1	0+1	S1>3	CL1	CL2

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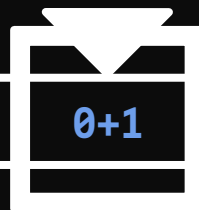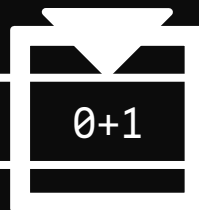
CPU Cycle

Registers

25	10	

RAM

15	10		

Head

Operations

F0>0	F1>1	0+1	S1>3	CL1	CL2

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CPU Cycle

Registers

| 25 | 10 | |

RAM

15	10		

Head

Operations

| Operations | F0>0 | F1>1 | 0+1 | S1>3 | CL1 | CL2 |

CPU Cycle

Registers

25	10	

RAM

15	10	**25**	

Head

Operations	F0>0	F1>1	0+1	S1>3	CL1	CL2

CPU Cycle

Registers

| 25 | 10 | |

RAM

15	10	25	

Head

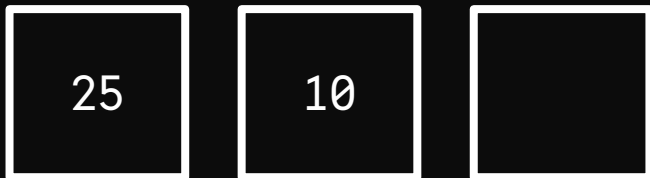| Operations	F0>0	F1>1	0+1	S1>3	CL1	CL2

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CPU Clock

The clock determines the pace of this cycle

- Speed Measured in Hz (Cycles per second)
- Faster = Faster Computer

Overclocking is literally just speeding up the CPU clock!

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Keyboard Interrupts

Interrupt the current runtime of your program to get what the keyboard is saying

- Literally Halts the CPU's cycle
- Return to the previous execution after the keypress process
- Can be used to control the program

Unfortunately, your OS handles this, not you. C++ simply cannot control this without OS specific packages

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Windows Read Keyboard

```
#include <windows.h>

if (GetKeyState(VK_MENU) & 0x8000) {/*ALT key is down*/}

// You'll need to lookup your keycodes

// This isn't reading interrupts (Windows requires you have a
window open to do that, and the console doesn't count)


if (GetAsyncKeyState(VK_SPACE) & 0x8000) {/*Spacebar*/}

// Stores keypresses longer
```

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Linux Read Keyboard

```
#include <ncurses.h>


initscr(); raw(); noecho();

int inputCode = getch();

if (inputCode == 32) {/*SPACE Pressed*/}

endwin();

// Honestly, IDK if this works, but this was the most common
answer online
```

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Assignment

Create Controls for your Video Player

Have SPACE pause your animation and ESC exit your program.

I will walk you through this process in class!