



CPSC 359 – Tutorial #8

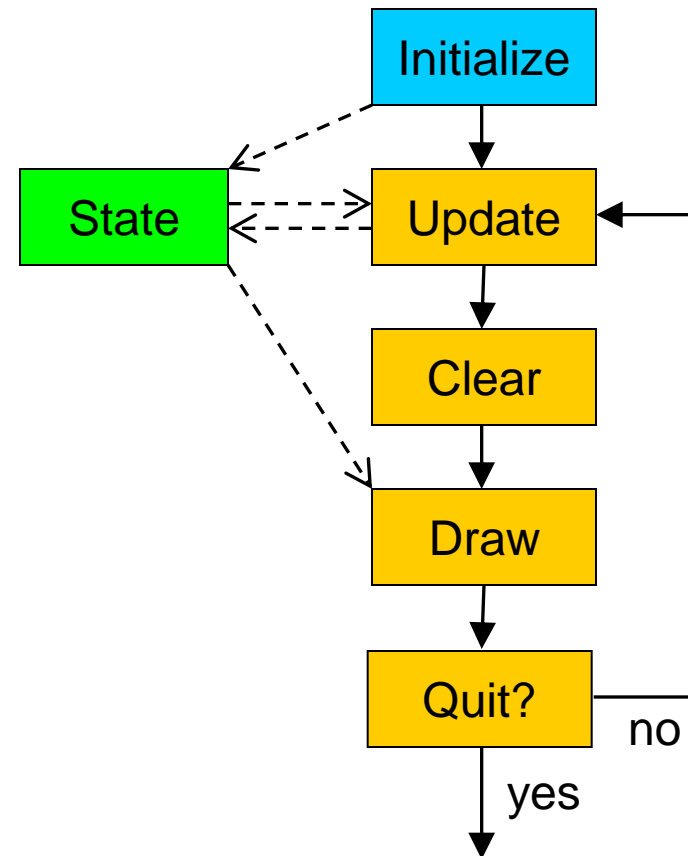
Animation & Drawing ASCII Text

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Animation

Components of Animation

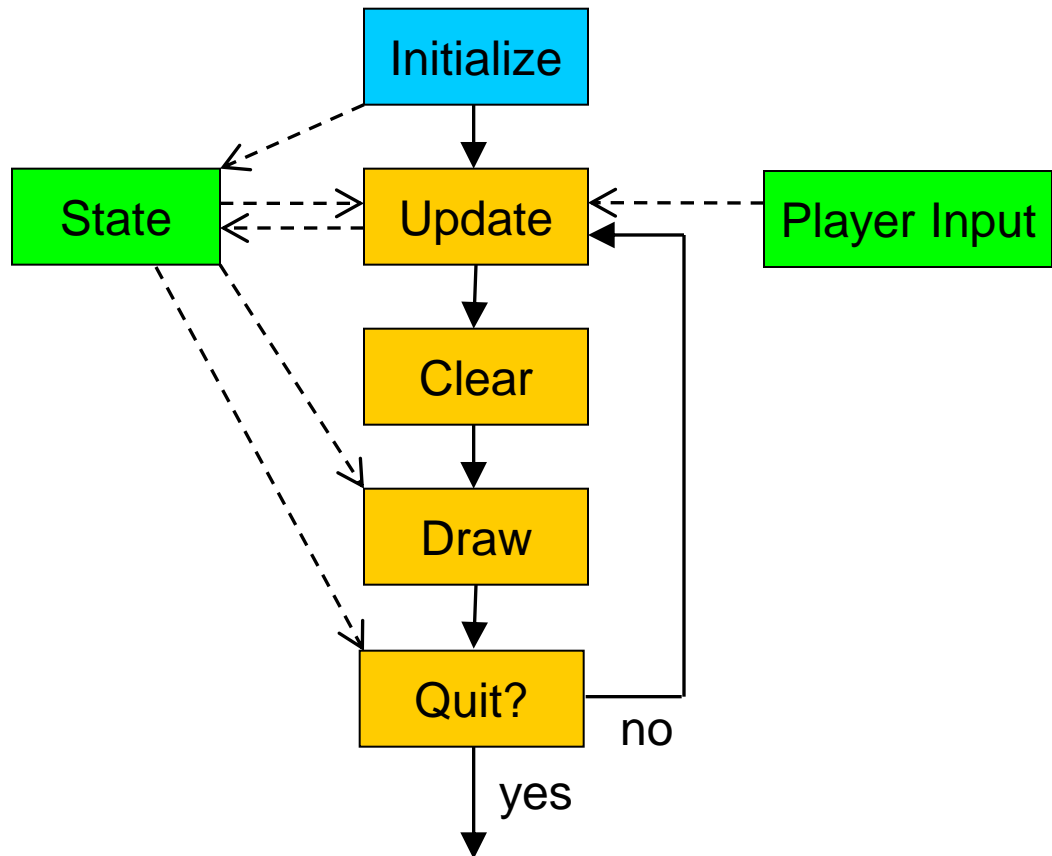
- The State Data Structure
 - Position of moving objects
 - Velocities / Accelerations
- The Update Function
 - Update the State Structure
 - Change positions / vel / accel
 - Check conditions (eg: collisions)
- The Draw Function
 - Draw the State Structure



Animation

A Game Loop

- Get Player Input
 - Update State
- Game vars in State
 - Score
 - Level
 - Win / Lose
- Quit based on Input
 - Store in State



Drawing ASCII Text

Font Maps

- Define “bitmaps” for characters
 - One bit per pixel
 - Character has width / height
 - ie: $8 \times 16 = 8$ cols, 16 rows
= 16 bytes per char
- ASCII value gives offset
 - $\text{base} + (\text{ASCII}(\text{char}) * 16)$
 - eg: $\text{ASCII}('B') = 66$
 - $66 * 16 = 1056 = 0x420$

Offset	Value	7	6	5	4	3	2	1	0
0x420	00	0	0	0	0	0	0	0	0
0x421	00	0	0	0	0	0	0	0	0
0x422	00	0	0	0	0	0	0	0	0
0x423	7E	0	1	1	1	1	1	1	0
0x424	82	1	0	0	0	0	0	1	0
0x425	82	1	0	0	0	0	0	1	0
0x426	82	1	0	0	0	0	0	1	0
0x427	7E	0	1	1	1	1	1	1	0
0x428	82	1	0	0	0	0	0	1	0
0x429	82	1	0	0	0	0	0	1	0
0x42A	82	1	0	0	0	0	0	1	0
0x42B	7E	0	1	1	1	1	1	1	0
0x42C	00	0	0	0	0	0	0	0	0
0x42D	00	0	0	0	0	0	0	0	0
0x42E	00	0	0	0	0	0	0	0	0
0x42F	00	0	0	0	0	0	0	0	0

Drawing ASCII Text

Adding the Font Data

- Download “font.bin” from D2L
 - Save it in the source/ directory for your project
- Add the following to the `.data` section:

```
.align 4  
font: .incbin “font.bin”
```

- The label `font` will be used as the base address of the font map
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