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جامعة كارنيغي ميلون في قطر
Carnegie Mellon Qatar

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SCPP CS Project

2016

Lecture 6

Quiz

Administrivia

Control structures

Activity: Morse Finch



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Activity: Morse Finch

1. Fill in the blanks in the code found below Q2.
 - a) Initialize variable 'q' to be 4
 - b) Call function doCrazyMath with parameters 'q', 'r', & 's'.
 - c) Print out the variable 'crazy'
 - d) Give the function doCrazyMath a return type of int
 - e) return the variable 'result'

2. What gets printed when you run the code below?

```
void setup() {  
  int crazy = 0;  
  int q;  
  ____ [a] ____;  
  int r = 10;  
  int s = 5;  
  crazy = ____ [b] ____;  
  ____ [c] ____;  
}  
  
__ [d] __ doCrazyMath(int x, int y, int z) {  
  int result = y - x + z;  
  ____ [e] ____;  
}
```

3. What is the difference between global variables and local/regular variables?

4. What gets printed when you run the code below?

```
int nachos;  
void setup() {  
  nachos = 5;  
  setNachos(3);  
  println(nachos);  
}  
void setNachos(int n) {  
  nachos = n;  
}
```



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First things first:

- Assignment vs. Comparison
- = vs. ==

Other comparison operators:

- <
- >
- <=
- >=

Examples

4 < 5

4 <= 4

3 < 2

3 <= 2

4 == 6

5 == 5



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Quick note:

`x++` is shorthand for `x = x+1`

Example:

```
int i = 3;
i++;
println(i);
```

`x--` is shorthand for `x = x-1`

`x+=3` is shorthand for `x = x + 3`

- Doesn't have to be 3.
- Obvious, but just sayin'.



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Conditionals

```
if( isSleepy == true) {  
    println("I'm sleepy!");  
}
```

```
else if( isHungry == true) {  
    println("I'm hungry!");  
}
```

```
else {  
    println("I'm neither sleepy nor hungry!");  
}
```



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Looping!

While loops will keep repeating until the condition is false.

```
int x = 5;
```

```
while( x <= 10 ) {  
    println(x);  
    x++;  
}
```



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Looping!

For loops make it easier to do a counting-based loop

```
// I will iterate while i goes from 0-9
for( int i = 0; i<10; i++ ) {
    println(i);
}
```



Looping!

How could you loop over and over again?

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```
while( true ) {  
    println("I'm always sleepy");  
}
```



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Activity: Morse Finch

Quick like a bunny, make me a program:

Check the temperature of the finch at the beginning of the program.

Turn the finch's nose blue if it's less than 25C

Turn the finch's nose red if it's greater than or equal to 25C

You will need a conditional. Why?

Warm up your finch to let it change temperatures.
Make sure you see it be blue and red



Quick like a bunny, make me another program:

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Activity: Morse Finch

Regularly check the temperature of the finch.

Turn the finches nose blue if it's less than 25C

Turn the finches nose red if it's greater than or equal to 25C

You will need both a loop and a conditional. Why?

What is a condition that will make your loop run forever? (until you stop the program)

You should only have to add to your pre-existing code.



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Control structures

Activity: Morse Finch

What is Morse Code?

· _ · _ · · · · ·
_ · _ _ _ _ · _ ·
· · · · · · _ · _
· _ _ · · · · · · _
_ · _ _ _ _ · _
· · _ · · _ · · · · ·



Using Morse Code to pass a word in class! It's fun to be geeky!

Lecture 6

Review
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Functions
Control Structures
Activity: Morse Finch

Listen up for project partners and requirements.

International Morse Code

1. The length of a dot is one unit.
2. A dash is three units.
3. The space between parts of the same letter is one unit.
4. The space between letters is three units.
5. The space between words is seven units.

A	• —	U	• • —
B	— • • •	V	• • • —
C	— • — •	W	• — —
D	— • •	X	— • • —
E	•	Y	— • — —
F	• • — •	Z	— — • •
G	— — •		
H	• • • •		
I	• •		
J	• — — —		
K	— • —	1	• — — — —
L	• — • •	2	• • — — —
M	— —	3	• • • — —
N	— •	4	• • • • —
O	— — —	5	• • • • •
P	• — — •	6	— • • • •
Q	— — • —	7	— — • • •
R	• — • •	8	— — — • •
S	• • •	9	— — — — •
T	—	0	— — — — —



Lecture 6

Review

Quiz

Functions

Control Structures

Activity: Morse Finch

We are going to try and pass a secret word in class to one another using the Finches. You must each send and receive one word.

- Your partner will be on the opposite side of the classroom trying to receive your message
- You will change the finch's nose based on how it's held
 - If it is being held...
 - with left wing down, turn the nose on for .5 second
 - with right wing down, turn the nose on for 2 seconds
 - flat or level, turn nose off
- The time will mean:
 - .5 seconds: .
 - 2 seconds: _



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Activity: Morse Finch

How will you know how your finch is being held?

```
Finch sean = new Finch();
```

Useful methods that return booleans:

```
sean.isRightWingDown()
```

```
sean.isLeftWingDown()
```

```
sean.isTapped()
```

You will need to use in your code

- Conditionals
- An infinite loop

You may not communicate with your partner,
but you may work with anyone on your side of the
classroom.

