

MORE PYTHON-ESQUE C FEATURES

Getting Values from Functions

- Just like in Python (almost)
- Consider the function:
 - ▣ `double convertCtoF(double celsius) {
 return 32.0 + 9.0 * celsius / 5.0;
}`
- How would we get result from a function in Python?
 - ▣ `fahr = convertCtoF(20.0)`
- What's different in C?
 - ▣ Need to declare the type of fahr
 - ▣ Need a semi-colon

Use If Statements or Else

- **if m % 2 == 0:**
 print "even"
else:
 print "odd"

- Python:
 - ▣ Colons and indenting

- **if (m % 2 == 0) {**
 printf("even");
} **else {**
 printf("odd");
}

- C:
 - ▣ Parentheses, braces

Or Else What?

- **if gpa > 2.0:**
 print "safe"
elif gpa >= 1.0:
 print "trouble"
else:
 print "sqrt club"

- Python:
 - ▣ Colons and indenting
 - ▣ elif

- **if (gpa > 2.0) {**
 printf("safe");
} else if (gpa >= 1.0) {
 printf("trouble");
} else {
 printf("sqrt club");
}

- C:
 - ▣ Parentheses, braces
 - ▣ else if

Optional Braces

- Braces group statements
- Can omit for single statement bodies
- **if (gpa > 2.0)**
 printf("safe");
else if (gpa >= 1.0)
 printf("trouble");
else
 printf("sqrt club");



Danger, Will Robinson!

- What is printed in each case?

Case	n	a
1	1	1
2	-1	1
3	1	-1
4	-1	-1

- **else** goes with closest **if**
- Indenting does not matter to the compiler but use for code readability!

```
□ if (n > 0)
    if (a > 0)
        printf("X");
    else
        printf("Y");
```

Use braces to avoid confusion!

Ahh. That's better!

- What is printed in each case?

Case	n	a
1	1	1
2	-1	1
3	1	-1
4	-1	-1

```
□ if (n > 0) {  
    if (a > 0)  
        printf("X");  
} else {  
    printf("Y");  
}
```

Use braces to
avoid confusion!

Does C have a boolean type? 0

- Enter the following C code in Eclipse:

```
void testBoolean(int n, int m) {  
    int p = n < m;  
    printf("Is %d less than %d? %d\n", n,  
          m, p);  
}
```
- Add a couple of test calls to your **main()** function:

```
testBoolean(2, 3); testBoolean(3, 2);
```
- **0** in C is like **False** in Python
- All other numbers are like **True**

Boolean operators in C

- Python uses the words **and**, **or**, **not** for these Boolean operators. C uses symbols:
 - `&&` means "and"
 - `||` means "or"
 - `!` means "not"
- Example uses:
 - `if (a >= 3 && a <= 5) { ... }`
 - `if (!same (v1, v2)) { ... }`

I Could While Away the Hours

- How do you suppose the following Python code would be written in C?

```
while n != 0:  
    n = n - 1  
    print n
```

- How do you break out of a loop in Python?
- How do you suppose you break out of a loop in C?

A Little Input, Please

- To read input from user in C, use **scanf()**
- Syntax: **scanf(<formatString>, <pointer>, ...)**
- Example:

```
int age;  
scanf("%d", &age);
```

Another Example

Pushes prompt string to user before asking for input.

- To read input from user in C, use **scanf()**
- Syntax: **scanf(<formatString>, <pointer>, ...)**
- Example:

```
double f, g;
```

```
printf("Enter two real numbers separated by a comma:");
```

```
fflush(stdout);
```

```
scanf("%lf,%lf", &f, &g);
```

```
printf("Average: %5.2f\n", (f + g)/2.0);
```

ell-eff = "long float"
Why not d for double?

Comma is matched against user input

Tetris Project Presentation

- Each team has 5 minutes *MAX* to demo their Tetris project
- Each team will use the instructor's laptop to do so
- A team may use one of their laptops only if their demo fails to work on the instructor's laptop
- In addition to showing that the project works, teams will demo and discuss additional features they have added to their project