CSCI 1300

Spring 2022 - Starting Computing

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Overview

- This Week
- Person
- Stats
- Q&As
- Quiz
- Textbook
- Project
- Hall of Shame
- Weird but True
- Practicum MCQ

This Week

- Recitation 2: Due 26 (Wednesday) midnight
- Homework 2:
  - Start Early: Jan 26 (Wednesday) midnight
  - Final: Due Jan. 29 (Saturday) 6pm
- Week 3: 3-2-1: Due Jan. 29 (Saturday) midnight
- Quiz 3: Due Jan. 30 (Sunday) 6pm

Person

- Ash Duy

Stats

- Enrollment: 534 --> 524 students
- 3-2-1: 463 (87%) --> **411 (78%)** students
- Recitation: 496 (93%) --> 339 (65%) students
- Homework: 497 (93%) --> **454 (87%)** students
- Quiz: 480 (90%) --> **479 (91.4%)** students
- EdSTEM:
  - 202 (38%) --> **270 (52%)** students
  - 15 questions --> **39** questions
- Office Hours: about 30 people

3-2-1 Q&As

What is the difference between a programming language and a game engine (Frostbite for example)?

- My first snake game
  - collision detection
- Wolfenstein 3D
- Doom
- License

Why does the integer value just take the decimals off instead of rounding?

- Dropping the fraction is fast
- Rounding is often not needed by applications
    - e.g., divide an array into two halves

Quiz 2 Review

What is wrong with the following code snippet?

```
int main()
{
   int width = 10;
   height = 20.00;
   cout << "width = " << width << " height = " << height << endl;
   return 0;
}
```

1. The code snippet attempts to assign a decimal value to an integer variable.
2. The code snippet uses an undefined variable.
3. The code snippet attempts to assign an integer value to a decimal variable.,
4. The code snippet uses an uninitialized variable.

- Answer: 2 (24% chose 4, 6% chose 1)

Textbook

3.1 The if Statement

- Self-check: 4

3.2. Comparing

- Self-check: 1

3.5 Problem Solving: Flowcharts

- Self-check: 1

Special Topic 3.5: De Morgan's Law

- Dr. De Morgan
  - Father died when he was 10
  - Lady Loveface is his student
  - One eye is blind

Hall of Shame

- Nested Statement Hell

Project

Inside

```
1234567890123456789
1234567890123456789
12345           67890
12345           67890
12345  *        67890
12345           67890
12345           67890
1234567890123456789
1234567890123456789
```

Test if our avatar `*` at `(x,y)` is inside a sqaure area.

```
if (x > 5 && x < 16 && y > 2 && y < 8) {
    cout << "inside";
}
```

Inside --> Outside

Test if our avatar `*` at `(x,y)` is outside a sqaure area.

```
if (!(x > 5 && x < 16 && y > 2 && y < 8)) {
    cout << "outside";
}
```

De Morgan's Law

- Negate a group of `&&`

  !(x > 5 && x < 16 && y > 2 && y < 8)

- Apply the De Morgan's Law

  !(x > 5) || !(x < 16) || !(y > 2) || !(y< 8)

- Flip relationships

  x <= 5 || x >= 16 || y <= 2 || y >= 8

Weird But True

0.1 does not exist as a 64-bit floating number

- decimal: 0.1
- cloeset binary number:

  0.0001100110011001100110011001100110011001100110011001101
- converted to decimal:

  0.1000000000000000055511151231257827021181583404541015625
- but 0.5, 0.25, 0.125 do exist

The square root of 2.0 times itself is NOT 2.0

- What is `sqrt(2) * sqrt(2)`?
- It is 2.0000000000000044.
- Is it a Yes or a No

```
if (sqrt(2) * sqrt(2) == 2.0)
```

- No.

Practicum MCQ

Which of the following is NOT a valid identifier?

1. myInteger
2. return
3. total3
4. myInt

- Answer: 2 (1/4 got wrong)

What is the value of x after the following statements?

```
int x;
x = x + 30;
```

1. 0
2. 30
3. 33
4. garbage

- Answer: 4 (1/4 got wrong)

What is the value of x after the following statement?

```
float x;
x = 3.0 / 4.0 + 3 + 2 / 5
```

1. 1.75
2. 5.75
3. 3.75
4. 5.75

- Answer: 3 (1/3 got wrong)

Which of the following are valid function calls to the pow function?

1. double pow(1.1,3.0);
2. pow(2);
3. pow(int x, int y);
4. pow(1.1,3.0);

- Answer: 4 (1/3 got wrong)

What is the output of the following code?

```
float value;
value = 33.5;
cout << "value" << endl;
```

1. garbage
2. 33.5
3. value
4. 33

- Answer: value (1/3 got wrong)