CS 105 Midterm Review 2

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September 29, 2024

Question 1.

For each of the following, take the English and convert it into Processing conditionals. Anything written in `teletype text` is a variable or function that you can use.

(a) If the mouse is in the box (given by boolean `mouseInBox`), then make the box rainbow-colored (using `rainbow()`, a function that was implemented for you for this task).

(b) If the `float temperature` is below 32, print "Freezing." If it's between 32 and 50, print "Cold." Otherwise, print "Warm."

(c) If the mouse is in the box (`x` = 50, `y` = 25, `width` = 75, `height` = 80), draw a point at the mouse's location (assume all Processing variables are available).

Question 2.

Consider the following code. Respond to each part below.

```
int score = 85;
if (score >= 90) {
  println("A");
} else if (score >= 80) {
  println("B");
} else {
  println("C");
}
```

(a) What is the output of the code?

(b) If the first line was changed to `int score = 46;`, what would the output be?

(c) If the first line was changed to `int score = 97;`, what would the output be?

(d) If the first line was changed to `int score = true;`, what would the output be?

Question 3.

Consider the following code. Respond to each part below.

```
int a = 35;

if(a % 2 == 0) {
println("Even!");
} else {
    println("Odd!");
    if(a % 5 == 0) {
        println("5!");
    }
}
```

(a) What is the output of the code?

(b) If the first line was changed to `int a = 23;`, what would the output be?

(c) If the first line was changed to `int a = 72;`, what would the output be?

(d) If the first line was changed to `int a = 50;`, what would the output be?

Question 4.

For each of the following, determine if the loop runs 0 times, a finite number of times, or an infinite number of times.

```
int i = 0;
while(i < 5) {
    println(i);
    i--;
    i++;
}
```

A. 0 times

B. finite number of times

C. infinite number of times

```
while(false){
    println("yay!");
  }
```

A. 0 times

B. finite number of times

C. infinite number of times

```
int i = 0;
  while(i < 5) {
    println(i);
    i += 2;
  }
```

A. 0 times

B. finite number of times

C. infinite number of times

```
int i = 0;
  while(i > -10) {
    println(i);
    i -= 2;
  }
```

A. 0 times

B. finite number of times

C. infinite number of times

Question 5.

For each of the following loops, write a for loop that performs the exact same tasks as the given loop.

```
int i = 0;
while(i < 5) {
  println(i);
  rect(width/2 * i, height/2 * i, 15, 15);
  i += 2;
}
```

```
int i = 0;
while(i >- 10) {
  println(i);
  mySuperAwesomeCoolFunction3(i);
  i -= 2;
}
```

Question 6.

Let's trace some loops! For each loop given below, give its output, along with the final values of all variables.

```
int total = 0;
for (int i = 1; i <= 5; i++) {
  if (i % 2 == 0) {
    total += i;
  }
  println("i = " + i + ", total = " + total);
}
```

Console

Variables

```
for (int i = 1; i <= 5; i++) {
  for (int j = 1; j <= i; j++) {
    print(j + " ");
  }
  println();  // new line
}
```

Console

Variables