ICS20 Unit 6 Practice Conditional Statements

Unit 6A Conditional Structures Part 1

Timeline: 1/2 Class

Exercise 1

1. Type in following lines and test the program **(File name: IfStructurel.pde)**:

```
1.          // Declaration Section
2.      float testMark, outOf ;

3.          // Program Title
4.      void  title(){
5.          print("\t\t\t\t\t\tTest Percentage");
6.      }
7.          // Program introduction
8.      void introduction() {
9.          title();
10.         println("\n\n\nThis program will determine your test average.");
11.     }
12.         //  User Input
13.     void userInput(){
14.
15.       testMark=getFloat("Please enter your first test mark");
16.       outOf=getFloat("Please enter the amount the test was out of:");
17.     }

18.         //    Processing &. Output
        void display() {
          //Grade Calculation
19.       float grade;    //local variable
20.         grade = (testMark/outOf) * 100;
21.       //Output using an if structure

22.     if (grade >= 50.0) {
23.         println("You passed with "+ grade+" percent!");
24.     }else{
25.         println("You failed with " + grade + " percent!");
26.     }

27.     }
28.     void setup(){
29.       introduction();
30.       userInput();
31.       display();
32.     }
```

Run the program with these inputs. Only write the final output line in the space below:

Input		Output
testMark	30	You passed with 60.000004 percent!
outOf	50	
testMark	20	You failed with 25.0 percent!
outOf	80	
testMark	34	You passed with 60.714287 percent!
outOf	56	

2. Change the if structure in the program above to this (do not alter anything else!):

```
if (grade >= 90) {
        println( "You passed with " + grade + " percent!");
        println("That's an A+!");
}else if (grade >= 50){
        println("You passed with " +  grade +  " percent!");
}else{
        println( "You failed with " +  grade + " percent!");
```

3. Alter your new program so that it also outputs the correct letter grades of A, B, C and D for the correct mark ranges. There will be no output if grade is less than zero or more than 100.

Test your program. File name: lfStructure2.pde. Print the source code and hand it in with this assignment Programming comments!

Exercise 2

Without using a computer decide the output from the following code segments

```
int x = 75;
if (x   > 50)  {
println(x    + "  is greater than   50! " );
 }  else if (x  >  25) {
println(x   +  "  is greater than    25! " );
 }  else  {
  println(x   +  "  is 25 or    less! " );
 }
```

Output:

```
int x  =75;
if(x   > 25)  {
println(x   + "  is greater    than 25! " );
}  else if (x   >   50)  {
 println(x    +    "  is greater    than 50! " );
 } else {
  println(x    +  "  is 25 or    less! " );
 }
```

Output: x is greater than 25!

The code segments above are very similar, yet the output is different. Can you explain why?

Only one part of the entire segment will be executed, and if more than one is true then the first one their will be the only one executed.

Seventy five is greater than 50 and 25 making both if and else if conditions true. Why is there only one output? Because only the first one written will be executed if more than one apply.

Unit 6B Conditional Structures Part 1

Exercise 1

1. Type in following lines and test the program (File name: IfStructure.pde):

```
1   //Declaration Section
2   int birthYear, currentYear ;
    //Program Title
3   void title(){
4       println("\t\t\tAge program");
7   }
8   //Programintroduction
9   void introduction() {
10      title();
11      println("\t\tThis program will help you determine how old you are.");
12  }
13  // User Input
14  void userInput() {
7    birthYear=getInt("Please enter your birth year: ");
    currentYear=getInt("Please enter the current year: ");
    }
8   //Processing &Output
9   void display() {
10      int age ;
        //Age Calculation
11      age= currentYear–birthyear;
12      //Output using an if structure

13      if (age > 21){
14          println( age , " is too old for high school !");
15      }else{
            println( "You are probably still in school!");
16      }
17  }
18  void setup() {
19  introduction();
20  userInput();
21  display();
22  }
    //Endprogram
```


Run the program with these inputs. Only write the final output line in the space below:

Input		Output
birthYear	2001	You are probably still in school!
currentYear	2015	
birthYear	1979	You are probably still in school!
currentYear	2000	
birthYear	1999	You are probably still in school!
currentYear	2010	

2. Change the if structure in the program above to this (do not alter anything else!):

```
If (age>=21){
        println(age +"is too old for highs school!");
        println("You are probably working now");
}else if (age>=14) {
        println(age+ " is just right for high school!");
}else{
        println("age+ "is too young for high school!");
}
```

3. Alter your new program so that it also correctly matches the ages for kindergarten, elementary and middle school. There will be no output if the age is less than 0. Test your program. File name: IfStructure2.pde. Print the source code and hand it in with this assignment. Do not forget to comment your program.

4. State the output from both segments of code below.

```
int x = 5;
println("x is now: " + x);
if (x  == 5) {
  x= 6;
}
if (x == 6) {
  x= 5;
}

 println( "x is now: "    +    x  );
```

Output: x is now: 5

Output: x is now: 5

```
int x = 5;
println("x is now: " + x);
if (x  == 5) {
  x= 6;
}
else if (x == 6) {
  x= 5;
}
println( "x is now: "    +    x  );
```

Output: x is now: 5

Output: x is now: 6

The code segments above are very similar, yet the output is different. Can you explain why?

if you use an "if", "else if" block, then only the first one will apply even when more than one is true. Using two "if"s on the other hand, won't have that issue, although it only prints the final statements so you only see two stages of the value change.

What modifications would need to be made so the output is the same for both segments?

You can simply make both use the same system.