University of Stirling Computing Science and Mathematics

CSCU9A1 Autumn 2016

Tutorial 3

1. Consider the following three fragments of code:

```
sum = 0;
if (xvalue > 0)
{
   sum++;
}
if (yvalue > 0
{
   sum++;
}
```

and

```
sum = 0;
if (xvalue > 0)
{
   sum++;
}
else if (yvalue > 0)
     {
        sum++;
     }
```

and

```
sum = 0;
if (xvalue > 0)
{
   sum++;
   if (yvalue > 0)
   {
       sum++;
   }
}
```

What is the difference in their effect? For each code fragment, draw up a *truth table* for the conditions `xvalue > 0` and `yvalue > 0`, showing the final value of `sum` in each case.

2. Consider the following fragment of code

```
String gradeLetter = "F" ;
if (grade >= 90) gradeLetter = "A" ;
if (grade >= 80) gradeLetter = "B" ;
if (grade >= 50) gradeLetter = "C" ;
```

   What does the above code do, and what do you think it was intended to do? How would you modify it to make it do what was intended?

3. Write a loop that computes and prints all the squares of positive integers less than *n*. Now write a program that computes all the integers whose squares are less than *n*.

4. Write a loop that computes the sum of all the even numbers between 2 and 100, inclusive. Now modify the program to compute the sum of all the even numbers between 46 and 1322554 inclusive.

5. What is an infinite loop (non-hint: what is the address of the Apple company in Cupertina, California). How do you terminate a program that is in an infinite loop (ii) on your laptop or desktop and (ii) on your smartphone?

6. Discuss the differences between the loop types supported in Java.