LAB 6, LOOPS

FUNDAMENTALS

Lab 6 – Loops

Objective

In this lab you'll practice using various looping constructs.

Part 1 – Calculating the grades for 5 students

Step by step

1. Create a new Console application called Lab06.
   Please refer to Lab01's instructions if you need help.
2. Add a class called Lab6 (with no main method)
3. Copy the code for GetInt() and Grades() from the Lab5 class in the Lab05 project you created in the last session.
4. Create a method in Lab6 called Part1() as:

```
public void Part1() {
}
```

5. Create an instance of Lab6 in the Main() and call the Part1() method to get ready for the rest of this exercise.

```
Lab6 lab6 = new Lab6();
lab6.Part1();
```

6. From now, all your code will go in the Part1() method.
7. We will revisit the Grades() method and change the code to process many students rather than one.
8. Call Grades() from the part1() method.
9. At the start of the Grade() method, create an array of 5 names called names.
10. Create an array of 5 integers called marks to hold the marks for our 5 students.
11. Create a loop (*while* or *for* loop) to repeat the following actions:
    a. Get a student name and store it in the names[]
    b. Get the mark for the student and store it in the marks[]
12. Having stored the names of the students and their marks, create another loop to display each *name*, the *mark* and the exam result (fail, pass, merit or distinction)

Part 2 – How long does it take to double your money

Assuming and initial investment of say £100, how many years does it take to grow to £200 given an interest rate of 5 percent?

Step by step

1. Create a new method called Part2() in the Lab6 class as:

```
public void Part1() {
}
```

1. In the above method, create variables to store the initial money, target (2 x initial amount), interest rate (assume 5%) and years (to count the number of years it takes to double your money) as:

```
double money = 100, target=0;
double rate = 0.05;
int years
```

2. Write code to calculate the number of years it takes to double your money to £200.

   Tip: Use a while loop which stops when the money >= £200

Part 3 – Nested Loop Practice

Ensure you can code up nested loops understanding the full sequence in which everything runs and effectively use the outer and 'inner' loop variables together in a nested loop. In this part you'll produce a multiplication table.

Step by step

1. Create a public void method called `MultiplicationTable()` in the Lab6 class.
2. We want you to produce this output on the console.

1	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	18	27	36	45	54	63	72	81	90
10	20	30	40	50	60	70	80	90	100

   Tip: Use two nested for loops (count from 1..10)
   Also, to print a number in 5 spaces, use a statement like:

   Console.Write("{0,5}", col * row);

** End **