**SD1 Programming**

**Exercise Sheet 3**

1. Write a program that will accept as input the marks obtained by each of the students in a class of 10 students. The program should count and then display the percentage of students that obtained a first class honours mark. To achieve first class honours a mark of 70 or greater is required.

**Objects: mark, numFirstClass = 0, percentFirstClass, grademark = 70;**

1. **For 10 times**
   1. **Prompt for and get mark**
   2. **if mark is 70 or greater**
      1. **increment numFirstClass**
2. **Calculate percentFirstClass**
3. **Display percentFirstClass**
4. Adapt your answer for question 1 so that the program may be used with a class of any size. The program should accept as input the class size followed by the set of marks for the class.

**Objects: mark, numStudents, numFirstClass = 0, percentFirstClass, grademark = 70;**

1. **Prompt for and get numStudents**
2. **For numStudents times**
   1. **Prompt for and get mark**
   2. **if mark is 70 or greater**
      1. **increment numFirstClass**
3. **Calculate percentFirstClass**
4. **Display percentFirstClass**
5. Adapt your answer for question 1 so that the class size is not entered but a final mark of -1 is entered to terminate the list of marks.

**Objects: mark, numStudents = 0, numFirstClass = 0, percentFirstClass, grademark = 70;**

1. **do**
   1. **Prompt for and get mark**
   2. **if mark is not terminator**
      1. **increment numStudents**
      2. **if mark is 70 or greater**
         1. **increment numFirstClass**

**while mark is not terminator**

1. **Calculate percentFirstClass**
2. **Display percentFirstClass**
3. Adapt your answer to question 4 to allow for the fact that no students may have sat the exam.

**Objects: mark, numStudents = 0, numFirstClass = 0, percentFirstClass, grademark = 70;**

1. **prompt for and get mark**
2. **while mark is not terminator**
   1. **increment numStudents**
   2. **if mark is 70 or greater**
      1. **increment numFirstClass**
   3. **prompt fro and get mark**
3. **if numStudents greater than zero**
   1. **Calculate percentFirstClass**
   2. **Display percentFirstClass**
4. Write a program that will display all the numbers in the range 1 to 100 that are evenly divisible by 3 and by 8.

**Objects: number**

* 1. **for 100 times from number 1 to 100**
     1. **if number modulus 3 and modulus 8 are zero**
        1. **display the number**

1. Write a program to display all the hour and minute values in a 24-hour clock from 00:00 to 23:59

**Objects: hour, minute**

* 1. **for hour 24 times**
     1. **for minute 60 times**
        1. **display hour : minute**

1. Write a program to display the following pattern

x x x x x

x x x x x

x x x x x

x x x x x x x x x x x x x x x

x x x x x x x x x x x x x x x

x x x x x x x x x x x x x x x

x x x x x

x x x x x

x x x x x