SINGAPORE POLYTECHNIC
SCHOOL OF ELECTRICAL & ELECTRONIC ENGINEERING

Diploma in Computer Engineering

Class: _____ Name: _____ Adm. No.: _____ Marks: _____

Time Allowed: 50 minutes

Instruction:

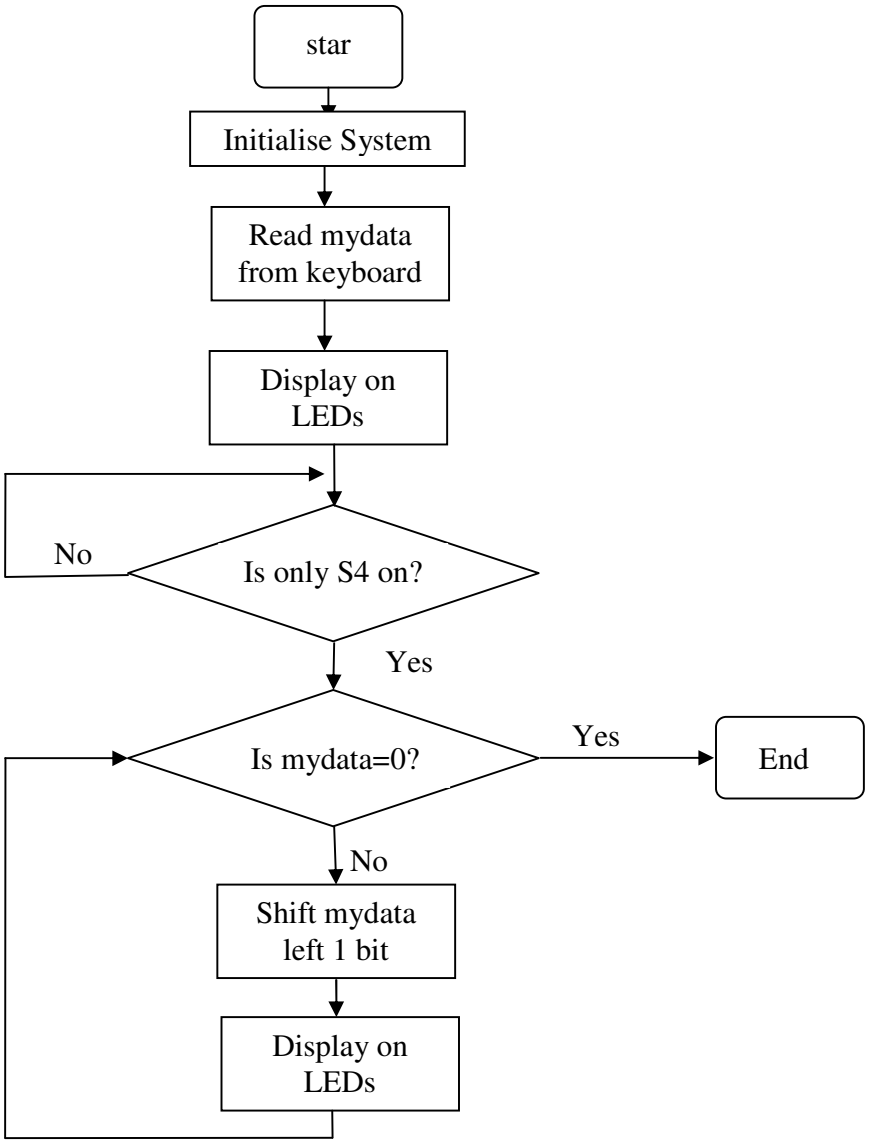
1. Create a **Win32 Console Application** project named LabTestOne in C:\Temp.
2. Within the project, add a C/C++ file under **Source Files** to hold your code. Use pNNNNNNN.cpp as the file name, where NNNNNNN is your admission no.
3. Type in the code from page 3 and fill in the necessary blanks.
4. Compile and build the program.
5. Demonstrate the running program to your lecturer-in-charge.

You will be required to submit your workspace files at the end of the test

Question:

1. Initially the program prompts the user to enter a hexadecimal number (0x00~0xFF) from the key board. The number is stored in the variable "mydata"
2. The value of mydata is then display on the LEDs.
3. The program then waits for the user to TURN ON switch S4. When S4 is ON, the value read in is a "0".
4. When the switch S4 in ON, the number which is displayed on the LEDs are shifted to the left one-bit-at-a-time with a delay of 0.5 seconds.
5. When all the bits are shifted out (mydata is equal to zero) the program stops.

The flowchart for the program is provided below:



Use the following program template on next page to develop your code for the program. The marks for each section in indicated, you need not add any further code that what is specified in the next section.

```
#include <stdio.h>
#include <_____>

//Constants for Parallel Port LPT1
#define   DR   0x3028
#define   SR   ______
#define   CR   ______

//function declarations
_____ Inp32 ( _____ );
_____ Out32 ( _____ );

void main()
{
    int mydata;       // variable to hold LED data
    _____       // variable to hold switch data

   // start
   printf("Program starting …\n");
   // initialise system
   _____
   //read my data
   printf("Please enter a hexadecimal value (0..FF) : 0x");
   scanf("%x", &mydata);
   //display on LEDs
   _____
   // read switches and check for S4
   _____
   _____
   while ( _____ ) {
       printf("Switch is OFF\n");
       _____     //check switches
       _____
   }
   // switch is ON
   // is mydata zero
   while ( _____ ) {
       // shift mydata left 1 bit
       _____
       // display on LEDs
       _____
       _____
   }
   // finished
   printf ("Completed!\n");
}
```

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Show your program to your lecturer to get his/her signature

Creation of project (5 maks)	
Compile successfully (10 marks)	
Build successfully (10 marks)	
Demonstration of program (10 marks)	