**Tutorial 7**



**BSc (Hons) in Information Technology**

**Year 1**



**IT1010** – **Introduction to Programming** **Semester 1, 2020**

# Question 1

What do the following two code segments print for the cases x = 1 and x = 10?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| i) | while (x > 1) { |  | ii) | do { |
|  | printf(“%d”, x); |  |  | printf(“%d”, x); |
|  | x--; |  |  | x--; |
|  | }  x = 1  Output is nothing because the while loop is checking variable x greater than 1.  x = 10;  output is 1098765432  Because the while loop is checking variable x greater than 10 and x was 10. |  |  | } while (x > 1);  x = 1  Output is 1 because the do while loop is checking variable x greater than 1.And this loop works at least once till condition is true.  x = 10;  output is 1098765432  Because the do while loop is checking variable x greater than 10 and x was 10. |

# Question 2

1. Write a C program to enter 4 module marks of a student from the keyboard and display the total of all four module marks.

#include <stdio.h>  
  
*int* main(*void*) {  
  
 *int* marks[4]; *//array of 4 module marks  
  
 int* total = 0; *//declaration and initialize total variable  
  
 int* count = 4; *//counting variable declaration and initialize  
  
 //loop 4 times for get 4 module  
 while* (count > 0) {  
   
 printf("Enter module marks :"); *//display message to tell input module marks* scanf("%d", &marks[count]); *//store user input marks to array elements* total += marks[count]; *//calculate each marks of sum and assign it to the total variable* count--; *//decrement count value* }  
  
 printf("Total Marks is : %d", total);  
  
 *return* 0;  
  
}

1. Modify the program written in i) above to enter 4 module marks of 3 students and display their total marks.

#include <stdio.h>  
  
int main(void)  
{  
  
 int marks01; //array of 1 module marks  
 int marks02; //array of 2 module marks  
 int marks03; //array of 3 module marks  
 int marks04; //array of 4 module marks  
  
 int total = 0; //declaration and initialize total variable  
  
 for (int i = 1; i <= 3; ++i)  
 {  
 printf("Student %d : \n", i);  
  
 printf("Enter module marks 01:"); //display message to tell input module 01 marks  
  
 scanf("%d", &marks01); //store user input mark 01 to array elements  
  
 printf("Enter module marks 02:"); //display message to tell input module 02 marks  
  
 scanf("%d", &marks02); //store user input mark 02 to array elements  
  
 printf("Enter module marks 03:"); //display message to tell input module 03 marks  
  
 scanf("%d", &marks03); //store user input mark 03 to array elements  
  
 printf("Enter module marks 04:"); //display message to tell input module 04 marks  
  
 scanf("%d", &marks04); //store user input mark 04 to array elements  
  
  
 total = marks01 + marks02 + marks03 + marks04 ; // calculate all marks of total by sum each module marks  
  
 printf("Total Marks is : %d\n", total); // display total marks  
  
 total = 0;  
  
 }  
  
 return 0;  
  
}

1. Display the student with the highest total mark.

#include <stdio.h>  
  
int main(void)  
{  
  
 int marks01; //array of 1 module marks  
 int marks02; //array of 2 module marks  
 int marks03; //array of 3 module marks  
 int marks04; //array of 4 module marks  
  
 int total = 0; //declaration and initialize total variable  
  
 int highestMarks = 0;  
  
 int studentNo = 0;  
  
 for (int i = 1; i <= 3; ++i)  
 {  
 printf("Student %d : \n", i);  
  
 printf("Enter module marks 01:"); //display message to tell input module 01 marks  
  
 scanf("%d", &marks01); //store user input mark 01 to array elements  
  
 printf("Enter module marks 02:"); //display message to tell input module 02 marks  
  
 scanf("%d", &marks02); //store user input mark 02 to array elements  
  
 printf("Enter module marks 03:"); //display message to tell input module 03 marks  
  
 scanf("%d", &marks03); //store user input mark 03 to array elements  
  
 printf("Enter module marks 04:"); //display message to tell input module 04 marks  
  
 scanf("%d", &marks04); //store user input mark 04 to array elements  
  
  
 total = marks01 + marks02 + marks03 + marks04 ; // calculate all marks of total by sum each module marks  
  
 printf("Total Marks is : %d\n", total); // display total marks  
  
 if(highestMarks < total)  
 {  
 highestMarks = total;  
 studentNo = i;  
  
 if(i == 3)  
 {  
 printf("Student is %d and Highest Total Mark is %d\n", studentNo,highestMarks);  
 }  
 }  
 else  
 {  
 printf("Student is %d and Highest Total Mark is %d\n", studentNo,highestMarks);  
 }  
  
 total = 0;  
  
 }  
  
 return 0;  
  
}

# Question 3

Write a C++ program using *for* loops to display the following pattern on the screen.

\*

\*\*

\*\*\*

\*\*\*\*

\*\*\*\*\*

\*\*\*\*\*\*

\*\*\*\*\*\*\*

\*\*\*\*\*\*\*

\*\*\*\*\*

\*\*\* \*

#include <stdio.h>  
  
int main(void)  
{  
  
 for(int i=1; i<=7; i++)  
 {  
 for(int j=1; j<=i; j++)  
 {  
 printf("\*");  
 }  
 printf("\n");  
  
 }  
  
 for(int i=7; i>0; i--)  
 {  
  
 for(int j=1; j<=i; j++)  
  
 {  
 printf("\*");  
 }  
  
 i -= 1;  
 printf("\n");  
 }  
   
  
 return 0;  
  
}