CSE 114 STRUCTURED PROGRAMMING LANGUAGE LAB

LAB 2

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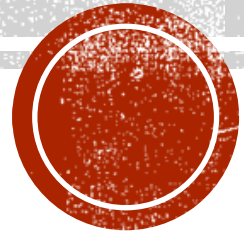
NEUB



OBJECTIVE

- To be familiar with different data types, Operators and Expressions in C.
- To learn the technique of taking input from the user in C.

INPUT & OUTPUT FUNCTIONS

Input functions	Output functions
`getchar();`	`putchar();`
`gets();`	`puts();`
`scanf();`	`printf();`

INPUT & OUTPUT FUNCTIONS

- getchar(): reads only a single character (input)
- putchar(): writes only a single character (output)

```
#include <stdio.h>
int main(){
    char c;

    printf("Enter a character: ");
    c = getchar();

    printf("\nYou entered: ");
    putchar( c );

    return 0;
}
```

INPUT & OUTPUT FUNCTIONS

- gets(): reads a line of text (string)
- puts(): writes a line of text (string)

```
#include <stdio.h>
int main(){
    char str[100];  // string

    printf("Enter a line of text:\n");
    gets(str);

    printf("\nYou entered: ");
    puts( str );

    return 0;
}
```

INPUT & OUTPUT FUNCTIONS

- scanf(): reads the input according to the format provided
- printf(): produces the output according to the format provided

```
#include <stdio.h>
int main(){
    int i;
    float x;

    printf("Enter an integer and a float:");
    scanf("%d %f", &i, &x);

    printf( "\nYou entered: %f %d ", x, i);

    return 0;
}
```

Format specifier: we can specify %d, %f, %c, %s etc.., to print or read integer, float, character or string respectively

INPUT & OUTPUT FUNCTIONS

- String input, output using scanf() and printf()

```
#include <stdio.h>
int main(){
    char word[30], line[100];

    printf("Enter a word: ");
    scanf("%s", word);

    printf("Enter a line of text: ");
    scanf("%[^\n]", line);

    printf("you entered:\n%s\n%s", word, line);
    return 0;
}
```

The format can be a simple constant string,
but we can specify %d, %f, %c, %s etc.., to print or read integer, float, character or string respectively

PROBLEM STATEMENT

- Write a program to take input of **name**, **roll** and **marks** obtained by a student in 3 subjects each have its 100 full marks and display the **name**, **roll** with **average score** secured.

PROBLEM ANALYSIS

Input variables	Processing	Output variables	Necessary header files
Name[30] (char) roll (int) Sub1(float) Sub2(float) Sub3(float)	m_sum = sub1+sub2+sub3 Score = m_sum/3	m_sum (float) Score (float)	stdio.h

ALGORITHM

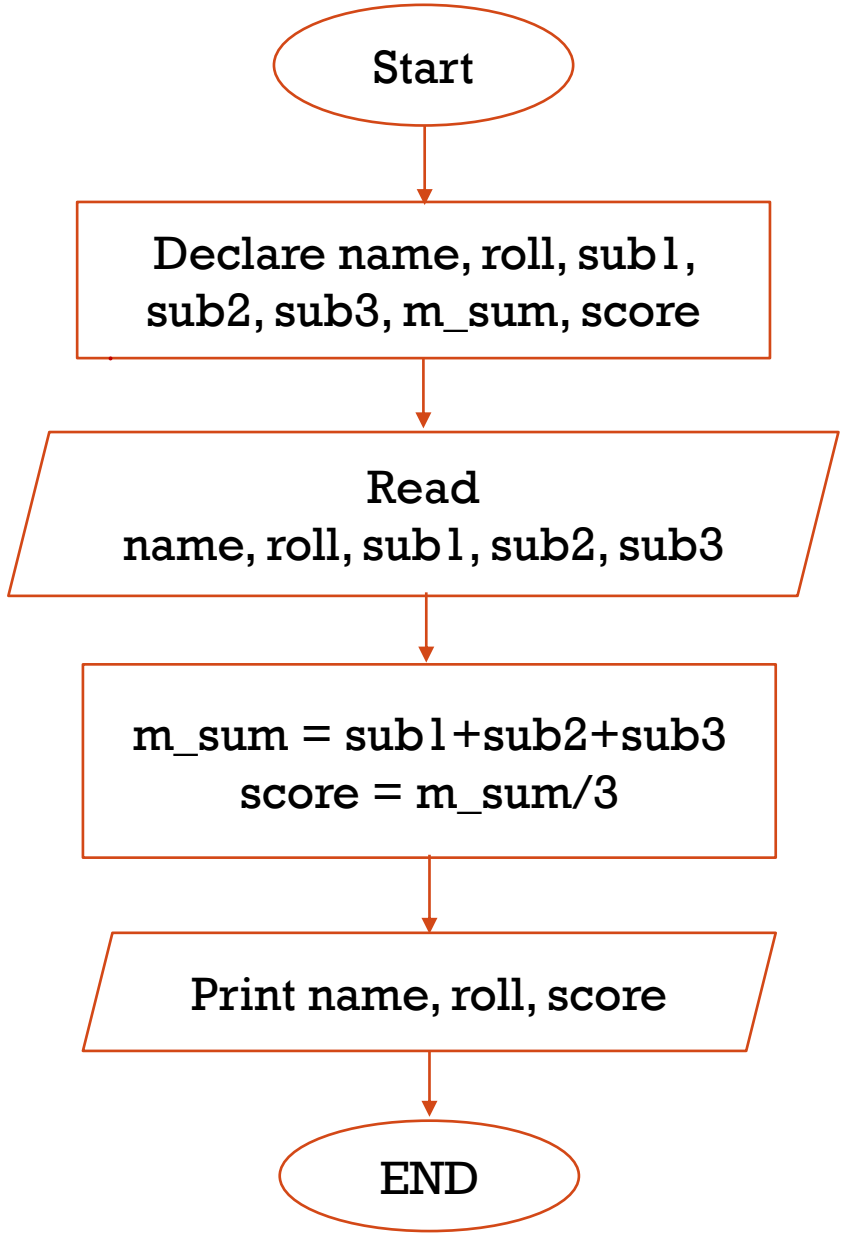
1. Start
2. Define variables: name, roll, sub1, sub2, sub3, m_sum, score
3. Take input from keyboard for all the input variables
4. Calculate the sum of marks and the average score as:

    m_sum = sub1 + sub2 + sub3;

    score = m_sum/3 ;

1. Display the name, roll number and percentage score.
2. Stop

FLOWCHART


Start
Declare name, roll, sub1, sub2, sub3, m_sum, score
Read name, roll, sub1, sub2, sub3
m_sum = sub1+sub2+sub3
score = m_sum/3
Print name, roll, score
END

INPUT & OUTPUT

Enter Name of Student: Asma Zaman

Roll Number: 63

Enter marks of 3 Subjects:

65

75

62.5

Name of Student: Asma Zaman

Roll Number: 63

Average Score: 67.5%

CODE

```
#include<stdio.h>
int main(){
    char name[20];
    int roll;
    float sub1, sub2, sub3, msum, score;
    printf("Enter Name of Student: ");
    scanf("%[^\n]", name);
    printf ("Roll Number: ");
    scanf("%d", &roll);
    printf ("Enter Marks in 3 Subjects:\n");
    scanf("%f%f%f", &sub1, &sub2, &sub3);
    msum = sub1+sub2+sub3;
    score = msum/3;
    printf("\nName of Student: %s", name);
    printf("\nRoll Number: %d", roll);
    printf ("\nScore: %2.2f", score);
    return 0;
}
```

LAB EXERCISES

1. Write a C program to prompt the user to input 3 integer values and print these values in forward and reversed order.
2. Write a program to check odd or even number using modulus operator.
3. Print the value of y for given x=3 & z=6
   a) `y = x++ + ++x;`
   b) `y = ++x + ++z;`
   c) `y= x>z? x:z;`