Bangladesh Army University of Engineering & Technology (BAUET)

Qadirabad, Natore 6431, Bangladesh

Department of Information and Communication Engineering (ICE)

Structured Programming Language Lab Manual

Course Code	ICE-1212
Course Title	Structured Programming Language Sessional
Credit Hours	1.5

Prepared by	Verified By
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General Guideline and Safety Instructions

1. Strictly follow the written and verbal instructions given by the teacher /Lab Instructor. If you do not understand the instructions, the handouts and the procedures, ask the instructor or teacher.
2. Students are required to attend all labs with official dress code and wearing ID card.
3. Mobile phones should be switched off in the lab. Keep bags in the bag shelf.
4. Keep the labs clean at all times, no food and drinks allowed inside the lab.
5. Students should work individually/team in the hardware and software task.
6. Students have to bring the lab manual cum lab report file along with them whenever they come for lab work.
7. Should take only the lab manual, calculator (if needed) and a pen or pencil to the work area.
8. Should utilize 3 hours' time properly to perform the experiment and to record the readings. Do the calculations, draw the graphs and take signature from the instructor.
9. If the experiment is not completed in the stipulated time, the pending work has to be carried out in the leisure hours or extended hours.
10. Intentional misconduct will lead to expulsion from the lab.
11. Do not handle any equipment without reading the safety instructions. Read the handout and procedures in the Lab Manual before starting the experiments.
12. Do your wiring, setup, and a careful circuit checkout before applying power. Do not make circuit changes or perform any wiring when power is on.
13. Avoid contact with energized electrical circuits.
14. Do not insert connectors forcefully into the sockets.
15. **NEVER** try to experiment with the power from the wall plug.

Course Description

To introduce the fundamental principles, mechanism of programming skills and develop basic programming skills to program design and development.

Course Objective:

At the end of the course students should

1.To learns basic idea of programming languages.

2. To learn how to write a program with C.

3. To learn how to think about the problems, their solutions and translating it to programming language.

4. To learn how to write program with user defined function and built-in function.

5. To learn how write program with file, structure, union, array etc.

Statement of Course Outcomes (CO):

Upon completion of all sessional, the students will be able to:

1. Discuss algorithm and solve problems using computers.
2. Practically analyze the fundamental principles, typical characteristics, and mechanisms of a structured programming language.
3. Apply practical knowledge to develop basic programming skills with respect to program design and development.

Assessment of Course Outcomes (CO):

CO	PO	Bloom's Taxonomy Level	KP	CP	CA	Delivery methods and activities	Assessment Tools
CO1	PO1	C2, C3, C4	KP1			Lecture, Lab Manual, and Demonstration	Lab Quiz, Lab Viva
CO2	PO3	C3		CP1 CP3 CP7		Lab Manual, Demonstration	Lab Performance/Lab Test
CO3	PO4	C4				Lab Manual, Demonstration	Lab Report, Lab Test

Assessment Criteria and Marks Distribution

Si. No.	Particulars	Marks
1	Lab Performance	10
2	Lab Report	20
3	Quiz Test	20
4	Lab Test	40
5	Lab Viva	10
Total		100

Format of Lab Report

All lab reports should have to follow the common format as below

- Experiment No
- Experiment Title
- Objectives
- Theory Overview (with formula/equations and/or figure if required)
- Results
- Discussion
- Conclusion

Instruction for Lab Report Writing

- Lab report must be hand written without copying from other works.
- Writing should be neat and clean with proper caption and labeling in figure and table.
- The title page of report should contain all the basic information such as experiment no & title, course code & title, student's information, teacher's information, experiment date, submission date.
- Result should include calculated and/or simulated and/or measured data with proper unit.
- Table and/or graph of result should be neat and clear with axis label and units where applicable.
- The discussion should present your findings from the experiment. Evaluate the outcome objectively, taking a candid and unbiased point of view. Suppose that the outcome is not close to what you expected. Even then, after checking your results, give reasons why you believe that outcome is not consistent with the expected.
- In discussion, state the discrepancies between the experimental results and the model (theory), and discuss the sources of the differences in terms of the errors by offering logical inferences and suggest improvements.
- Conclusion should present, a brief summary of what was done, how it was done, show the results and conclusions of the experiment.
- Report should be submitted timely, late submission will cause reduction of marking.
- All lab reports have to be maintained in a single file which has to bring in every laboratory class.

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INSTRUCTIONS TO STUDENTS

- Before entering the lab the student should carry the following things (MANDATORY)
    1. Identity card issued by the college.
    2. Class notes
    3. Lab observation book
    4. Lab Manual
    5. Lab Record
- Student must sign in and sign out in the register provided when attending the lab session without fail.
- Come to the laboratory in time. Students, who are late more than 15 min., will not be allowed to attend the lab.
- Students need to maintain 100% attendance in lab if not a strict action will be taken.
- All students must follow a Dress Code while in the laboratory
- Foods, drinks are NOT allowed.
- All bags must be left at the indicated place.
- Refer to the lab staff if you need any help in using the lab.
- Respect the laboratory and its other users.
- Workspace must be kept clean and tidy after experiment is completed.
- Read the Manual carefully before coming to the laboratory and be sure about what you are supposed to do.
- Do the experiments as per the instructions given in the manual.
- Copy all the programs to observation which are taught in class before attending the lab session.
- Students are not supposed to use floppy disks, pen drives without permission of lab- in charge.
- Lab records need to be submitted on or before the date of submission.

Week 1:

1. a) Write a C program to find the sum and average of three numbers.

Algorithm:

Step 1: Start

Step 2: Declare variables num1, num2,num3 and sum,average.

Step 3: Read values num1,num2,num3

Step 4: Add num1,num2,num3 and assign the result to sum.

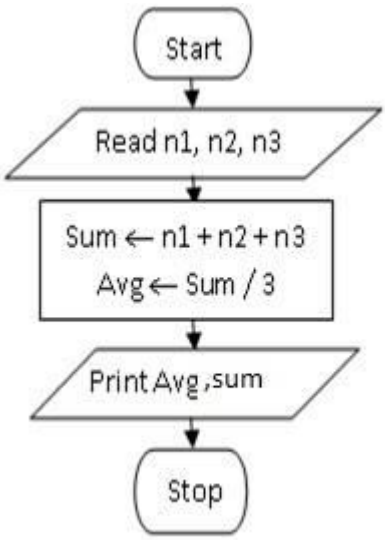
sum←num1+num2 +num3

average ← sum/3

Step 5: Display sum and average

Step 6: Stop

Flow Chart:



Program:

```
#include<stdio.h>
 int  main( )
 {
   int a,b,c;
   int sum,average;
   printf("Enter any three integers: ");
   scanf("%d%d %d",&a,&b,&c);
   sum = a+b+c;
   average=sum/3
   printf("Sum and average  of three  integers: %d  %d",sum,average);
   return 0;
}
```

SAMPLE INPUT:

Enter any three integers:2 4 5

EXPECTED OUTPUT:

Sum and average of three integers: 11 3

Record at least 3 results

Signature of faculty with date

1. b) Write a C program to find the sum of individual digits of positive integer.

AIM:

To find the sum of individual digits of positive integer.

Description:

Summation of digits of a number

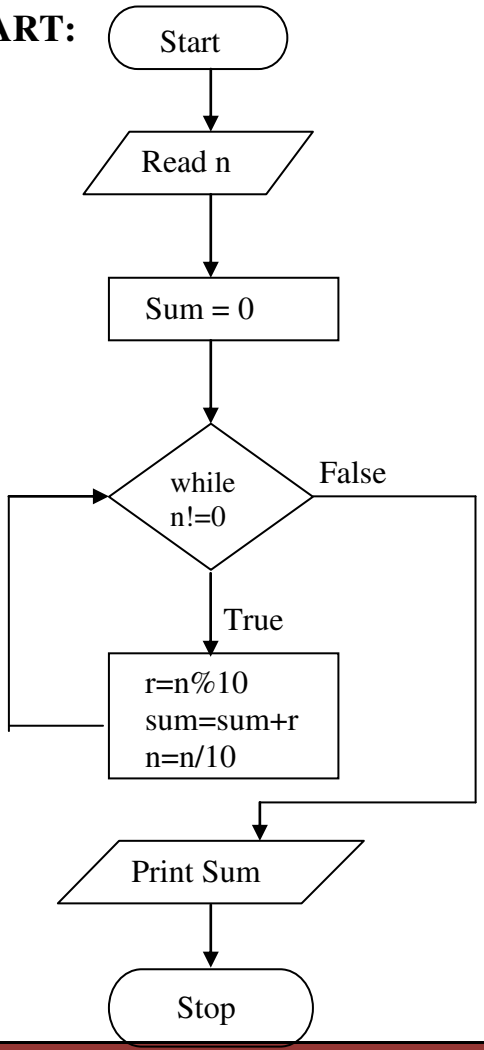
Ex: 1234

Summation =1+2+3+4=10

ALGORITHM:

Step 1: Start
Step 2: Read n
Step 3: Initialize sum ← 0
Step 4: while(n!=0)
Begin
Step 5: r←n%10
Step 6: sum←sum+r
Step 7: n←n/10
End
Step 8: Print "sum"
Step 9: Stop

FLOWCHART:



PROGRAM:

```
#include<stdio.h>
#include<conio.h>
void main()
{
int n,r,sum=0;
clrscr();
        printf("ENTER A POSITIVE INTEGER \n");
        scanf("%d",&n);
        while(n!=0)
        {
                r=n%10;
                sum=sum+r;
                n=n/10;
        }
printf("THE SUMOF INDIVIDUAL DIGITS OF A POSITIVE INTEGER IS..%d",sum);
getch();
}
```

SAMPLE INPUT:

ENTER A POSITIVE INTEGER
5 3 2 1

EXPECTED OUTPUT:

THE SUM OF INDIVIDUAL DIGITS OF A POSITIVE INTEGER IS..11

Record at least 3 results

Signature of faculty with date

1).c) Fibonacci Sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of the sequence.

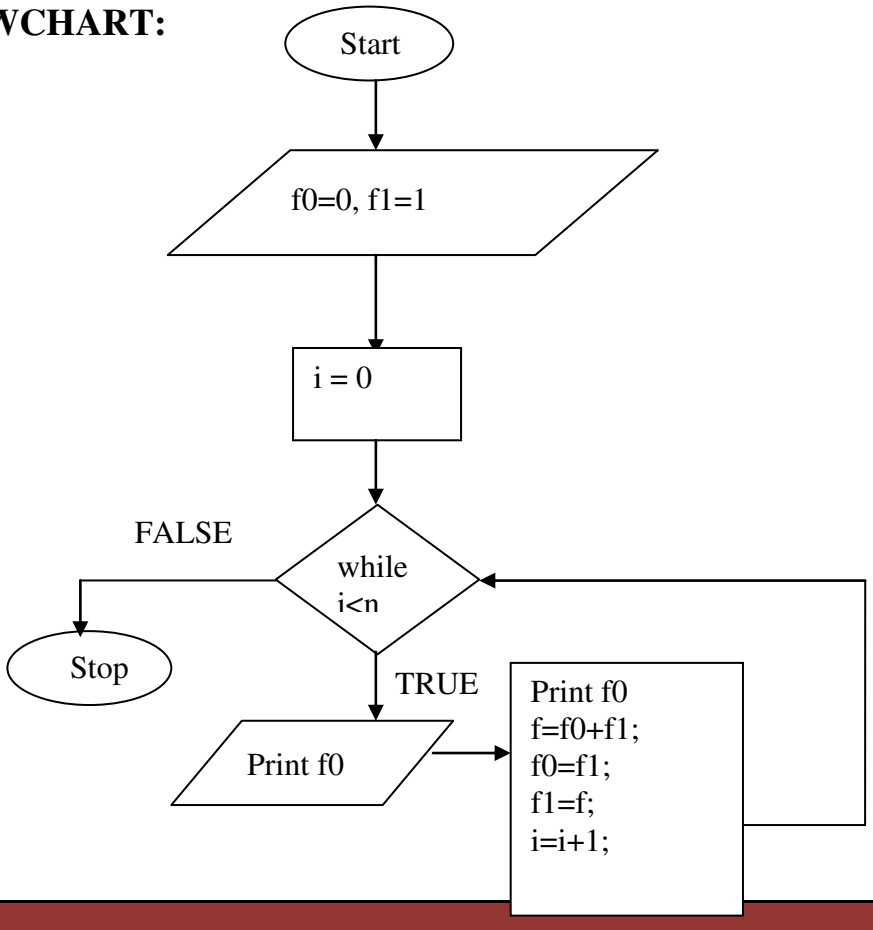
AIM: To generate the first n terms of the Fibonacci sequence..

Description: Initial Fibonacci numbers are 0 and 1. Next number can be generated by adding two numbers. So 0+1=1. Therefore next number can be generated by adding two previous . so Fibonacci series is 0 1 1 2 3 5 ……

ALGORITHM:

Step 1 : Start
Step 2 : Read n
Step 3 : Initialize f0 ← 0, f1 ← 1, f ← 0
Step 4 :i=0
Step 5 : while(i<=n) do as follows
printf("%d\t",f0);
f=f0+f1;
f0=f1;
f1=f;
i=i+1;
If not goto step 7
Step 6 : Stop

FLOWCHART:



PROGRAM:

```
#include<stdio.h>
#include<conio.h>
void main()
{
int f0,f1,f,n,i;
        clrscr();
        printf("ENTER THE VALUE FOR n \n");
        scanf("%d",&n);
        f0=0;
        f1=1;
        printf("FIBONACCI SEQUENCE FOR THE FIRST %d TERMS:\n",n);
        i=0;
        while(i<n)
        {
                printf("%d\t",f0);
                f=f0+f1;
                f0=f1;
                f1=f;
                i=i+1;
        }
}
```

INPUT:

ENTER THE VALUE FOR n
10

OUTPUT:

FIBONACCI SEQUENCE FOR THE FIRST 10 TERMS:
0 1 1 2 3 5 8 13 21 34

Record at least 3 results

Signature of faculty with date