C-Programming Lab Sheet
I Year / I Part
Faculty: Computer/Electrical/Civil

Lab Instructions

Dear Students,

Welcome to C programming Lab. For the practical works of C programming, you have to complete at least eight to ten lab activities throughout the course. These lab sheets will guide you to prepare for programming and submission of lab reports. Further, it helps you to understand practically about the knowledge of programming. You can use this lab guide as the base reference during your lab.

You have to submit lab report of previous lab into corresponding next lab during when your instructor shall take necessary viva for your each lab works. Your lab report to be submitted should include at least the following topics.

1. Cover Page
2. Title
3. Objective(s)
4. Problem Analysis
5. Algorithm
6. Flowchart
7. Coding
8. Output (Compilation, Debugging & Testing)
9. Discussion & Conclusion

On each lab, you have to submit the report as mentioned above however for additional lab exercise; you have to show the coding and output to your instructor.

TRIBHUVAN UNIVERSITY

DEPARTMENT OF COMPUTER ENGINEERING

KHWOPA COLLEGE OF ENGINEERING

LIBALI - 8, BHAKTAPUR

A

C-PROGRAMMING

LAB REPORT

of

Labsheet No. …

SUBMITTED BY

NAME: ……..

CRN: ……..

SUBMITTED TO

Department of Computer Engineering (KhCE)

Lab Date: ……..

Submission Date: …….

Initial Signature:

Final Signature:

2075

C-Programming Lab Sheet
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Labsheet#1

Objectives:
1. Execution of a sample program
2. printf(), scanf()
3. Data Types and Declaration
4. Keywords
5. Escape Sequence

Obeciive#1: Execution of a sample program.

Type the following program and see the output.

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

void main(){
        printf("This is my first C program");
        getch();
}
```

Activity: To compile: Alt+F9, To run: Ctrl+F9, To save F2, give file name and .C externsion before saving. Run this program without getch(). Run this program with clrscr() before printf(). Remove the semicolons and run the program. Right click on printf() and read the help of printf() function. Similarly right click on getch() to know more about it. In this everything can be studied using help. To remove right line(S) of program, enclose in /* */. This enclosing process is called commenting.

Objective#2: printf(), scanf()

Type the following program and run with different input.

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

void main(){
      int s, a,b, c=20;   /*variable declaration */
      printf("Enter value of a");  /*to display message on the screen */
      scanf("%d",&a);  /* to give value of a */
      printf("Enter value of b");  /*to display message on the screen  */
      scanf("%d",&b);    /* to give values of b */
      s=a+b*c;     /*   processing   */
      printf("Sum=%d",s);    /*  to display value stored at s
      getch();   /* to make program wait until user enters any character*/
}
```

Activity: Right click on int, printf, scanf, getch, void, main, include, stdio.h, conio.h and study more about the terms.

Objective#3: Data type and declaration.
Type the following program and run and discuss the output.

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

void main(){
      int a; float b; char c;
      clrscr();
      a=3; b=3; c='p';
      a=a*2.3;
      b=b*2.3;
      printf("\n a=%d",a);
      printf("\n b=%.2f",b);
      printf("\n c=%c",c);
      getch();
}
```

Activity: Write a program to input int, float and character data type and display it.

Objective#4: Keywords

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

void main(){
      int for;
      printf("Enter the value of for");
      scanf("%d",&for);
      printf("%d",for);
      getch();
}
```

Activity: Discuss about the error message and modify the program to get no error message.

Objective#5: Escape Sequences

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

void main(){
      printf("Hello!\n How are you");
      getch();
}
```

Activity: Replace '\n' with '\t' and note the output, what is difference between two.

Lab Exercises (please code yourself and show the output to instructor)

1. WAP that evaluates area of a circle using symbolic constant.
2. WAP to add two numbers (5 & 7) and display its sum.
3. WAP to multiply two numbers (10 & 8) and display its product.

C-Programming Lab Sheet
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Labsheet#2

Objectives:

1. If Statement & Relational Operator
2. If-else Statement
3. Nested if–else Statement
4. If-else Ladder
5. Logical Operator
6. Conditional Operator
7. Switch Statement

Objective#1: if statement and relational operator

Evaluate f(x) where

$$f(x) = \begin{cases} 1 \; for \; x > 0 \\ 0 \; for \; x = 0 \\ -1 \; for \; x = -1 \end{cases}$$

```
#inc1ude<stdio.h>
#include<conio.h>
void main(){
   int x,y;
   clrscr();
   printf("Enter the value of x");
   scanf("%d",&x);
   if(x>0) y=1;
   if(x==0) y=-1;
   printf("%d",y);
   getch();
}
```

Assignment:

1.1 WAP to enter two numbers and check whether they are exactly equals otherwise nothing.

1.2 Write algorithm, flowchart & program to find all possible roots of a quadratic equation $ax^2 + bx + c=0$. (Check answer: $m^2-4m+4=0$; =>2,2 $m^2+m-2=0$; =>1,-2 $m^2+4m+5=0$ =>-2±1i)

Objective#2: if-else statement
Input two values a, b and compare them.

```
#inc1ude<stdio.h>
#include<conio.h>
void main(){
int a,b;
clrscr();
printf("Enter the value of a,b");
scanf("%d%d",&a,&b);
if(a>b)
printf("a is greater than b");
else
printf("b is greater than b");
getch();
}
```

Assignment:

2.1 Write a program to input a number and test whether the given number is even or odd.
2.2 WAP to entered a year and check whether it is leap year or not.
2.3 WAP to check whether a given character is vowel or not.

Objective#3: Nested if-else statement
WAP to entered three no. and display the largest one using nested if else.

```
#include<stdio.h>
#include<conio.h>
void main(){
int a,b,c;
printf("Enter the value for a,b and c");
scanf("%d%d%d",&a,&b,&c);
        if(a>b){
                if(a>c){
                        printf("a is the largest number");
                }else{
                        printf("c is the largest number");
                }
        }else if(b>c){
                printf("b is the largest number");
        }else{
                printf("c is the largest one");
        }
}
```

Assignment:

3.1 Modify the above program to show that all three variables are equal to each other.
3.2 WAP that checks whether the number entered is exactly divisible by 5 but not by 11.
3.4 WAP that checks whether the number entered is exactly divisible by 3 but not by 7.

Objective#4: if-else ladder

```
#inc1ude<stdio.h>
#include<conio.h>
void main(){
int i,j,r=10 ;
clrscr();
printf("enter the value for i");
scanf("%d",&i);
printf("enter the value for j");
scanf("%d",&j);
if(i= =j)
        printf("the variable i is equal to variable j");
else if(i= =r)
        printf("the variable i is equal to variable r");
else if(r= =j)
        printf("the variable r is equal to variable j");
else
        printf("the three variables are not equal to each other");
getch();
}
```

Assignment:

4.1 Modify the above program to show that all three variables are equal to each other.

4.2 Any character is entered through the keyboard. WAP to determine whether the character entered is capital letter, a small case letter, a digits or special symbols.

Objective#5: Logical Operators

```
#inc1ude<stdio.h>
#include<conio.h>
void main(){
  int marks;
  printf("enter the marks of a student");
  scanf("%d",&marks);
  if(marks<32)
        printf("Fail");
  else if (marks>=32 && marks<45)
          printf("Third division");
  else if(marks>=45 && marks <60)
          printf("second division");
  else
          printf("First division");
  getch();
}
```

Assignment:

5.1 In the above problem find out whether the student is a second division or not, using logical OR operator.Hint: if(marks<45 || marks>=60) print not a second division otherwise print second division.

5.2 In the above problem find out whether the student is Pass or Not, using a logical NOT operator.

Objective#6: Conditional Statement

```
#inc1ude<stdio.h>
#include<conio.h>
void main(){
  int a,m;
  clrscr();
  printf("Enter the value for a");
  scanf("%d",&a);
  m=(a>4)?(4*a+a):(5*a-4*a);
  printf("the output is %d",m);
  getch();
}
```

Assignment: Evaluate the expression

Y=1.5x for x<=2

2x+5 for x>2 using conditional operator.

Objective#7: Switch statement

```
#inc1ude<stdio.h>
#include<conio.h>
void main(){
  int choice, quantity, tcost;
  clrscr();
  printf("Here is the menu\n");
  printf("1—Momo\n2—Chopsy\n3—chowmin\nenter choice no");
  scanf("%d",&choice);
  switch(choice){
   case 1:
            printf("enter the quantity");
            scanf("%d",&quantity);
            tcost=25*quantity;
            printf("item \t unitcost \t quantity \t total cost \n ");
            printf("momo\t\t25\t\t%d\t\t%d\n",quantity, tcost);
            break;

  case 2:
            printf("enter the quantity");
            scanf("%d",&quantity);
            tcost=30*quantity;
            printf("item \t unitcost \t quantity \t total cost \n ");
            printf("chopsy\t\t30\t\t%d\t\t%d\n",quantity, tcost);
            break;

  case 3:
            printf("enter the quantity");
            scanf("%d",&quantity);
            tcost=30*quantity;
            printf("item \t unitcost \t quantity \t total cost \n ");
            printf("chowmin\t\t30\t\t%d\t\t%d\n",quantity, tcost);
            break;
```

```
default:
        printf("\n incorrect choice");
}
getch();
}
```

Assignment

7.1 WAP to perform addition, subtraction, multiplication and division as per user choice.
7.2 WAP to determine the roots of a quadratic equation by using switch statement.