



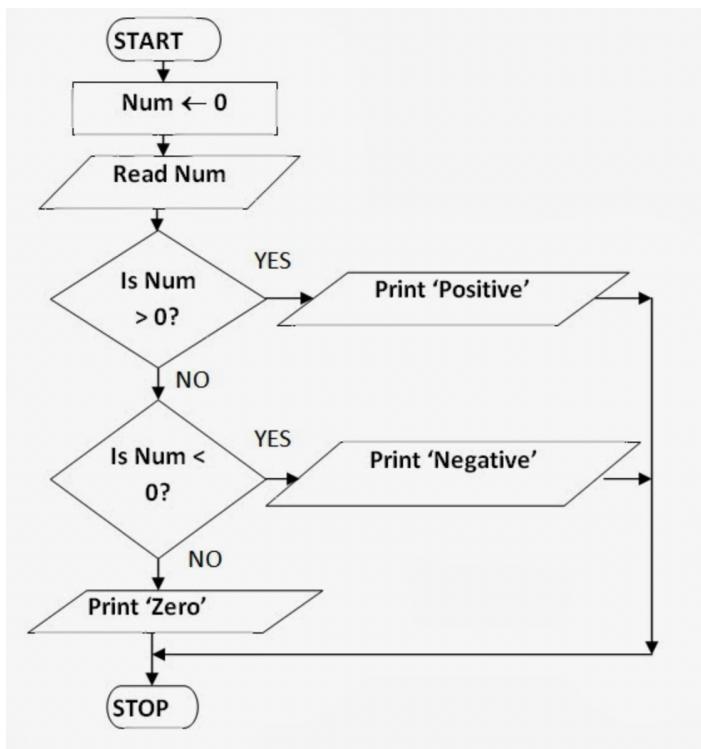
**Tribhuvan University
Institute of Engineering
Purwanchal Campus, Dharan**

C-Programming Lab Report

Prepared by:- Nigam Yadav

LAB SHEET NO.3[To be familiar with the selective structure (branching)]

Flowchart:



Code:-

1.WAP to check whether a number is negative, positive or zero.

```
#include<stdio.h>
#include<stdlib.h>
int main()
{
    int n;
    printf("Enter the value of n:");
    scanf("%d",&n);
    if(n==0)
        printf("the number is zero");
```

```

else if(n>=1)

    printf("the number is positive");

else

    printf("the number is negative");
return 0;
}

```

Output

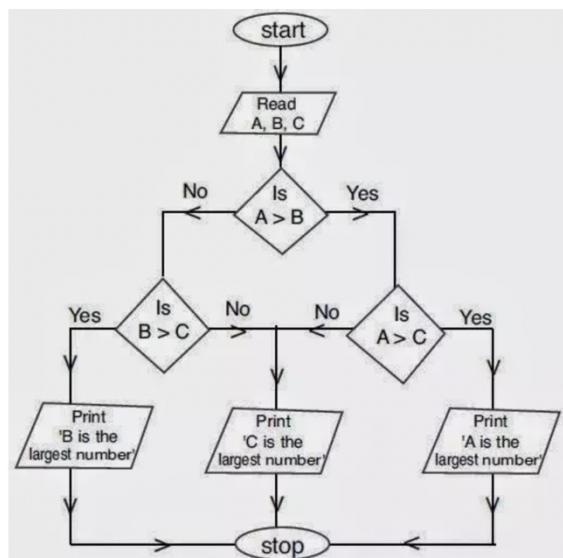
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
nigam@Nigams-MacBook-Pro C Tutorials % cd "/Users/nigam/Downloads/C Tutorials/" && gcc jpt.c -o jpt && "/Users/nigam/Downloads/C Tutorials/jpt"
Enter the value of n:-10
the number is negative
nigam@Nigams-MacBook-Pro C Tutorials %

```

2.WAP to find maximum number between three numbers entered by the user.

Flowchart:



Code:-

```

#include<stdio.h>
int main()
{

```

```
int a, b ,c;
printf("Enter the values of three numbers:");
scanf("%d%d%d",&a,&b,&c);
if(a>b)
{
    if(a>c)
        printf("the maximum value is %d",a);
}
else if(b>c)
{
    if(b>a)
        printf("the maximum value is %d",b);
}
else
    printf("the maximum value is %d",c);

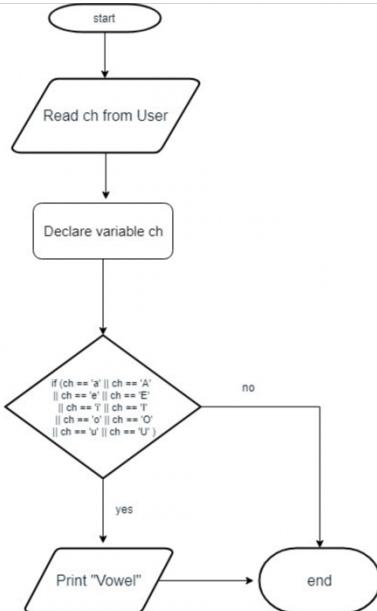
return 0;
}
```

Output

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL  Code + ⌂ ⌄ ⌁ ⌂   
cd "/Users/nigam/Downloads/C Tutorials/" && gcc jpt.c -o jpt && "/Users/nigam/Downloads/C Tutorials/"jpt  
nigam@Nigams-MacBook-Pro C Tutorials % cd "/Users/nigam/Downloads/C Tutorials/" && gcc jpt.c -o jpt && "/Users/nigam/Downloads/C Tutorials/"jpt  
Enter the values of three numbers:10  
20  
30  
the maximum value is 30  
nigam@Nigams-MacBook-Pro C Tutorials %
```

3.WAP to input a character from the user and check whether the character is vowel or consonant.

Flowchart:



Code:-

```
#include<stdio.h>
int main()
{
    char ch;
    printf("Enter a character:");
    scanf("%c",&ch);
    if (ch=='a' || ch=='e' || ch=='i' || ch=='o' || ch=='u')
    {
        printf("%c is vowel",ch);
    }
    else
        printf("%c is consonant",ch);

    return 0;
}
```

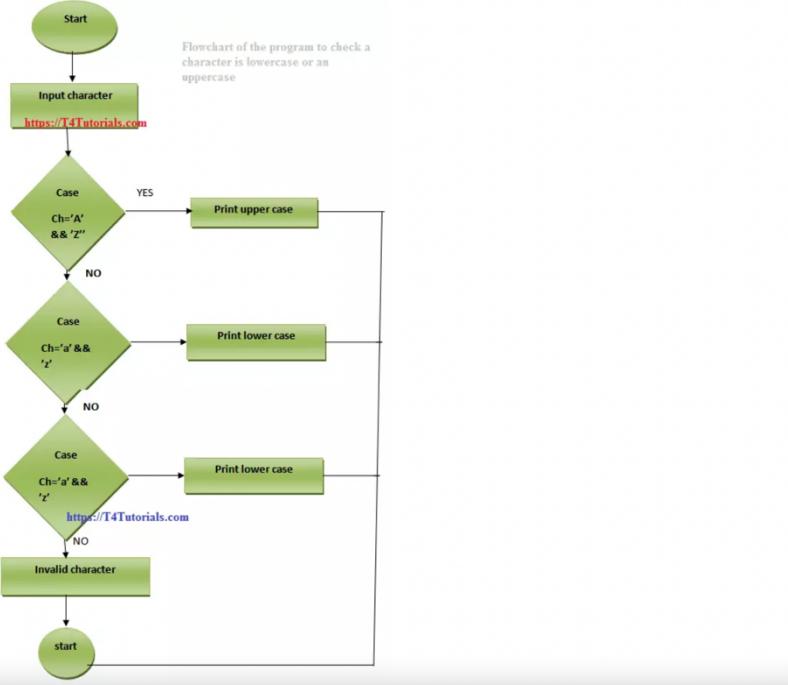
Output

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
cd "/Users/nigam/Downloads/C Tutorials/" && gcc jpt.c -o jpt && "/Users/nigam/Downloads/C Tutorials/"jpt
nigam@Nigams-MacBook-Pro C Tutorials % cd "/Users/nigam/Downloads/C Tutorials/" && gcc jpt.c -o jpt && "/Users/nigam/Downloads/C Tutorials/"jpt
Enter a character:b
b is consonant
nigam@Nigams-MacBook-Pro C Tutorials % cd "/Users/nigam/Downloads/C Tutorials/" && gcc jpt.c -o jpt && "/Users/nigam/Downloads/C Tutorials/"jpt
Enter a character:a
a is vowel
nigam@Nigams-MacBook-Pro C Tutorials %
```

4.WAP to input a character from the user and check whether the character is Alphabet or not. If the character is Alphabet then show whether it is uppercase or lowercase.

Flowchart:



Code:-

```
#include<stdio.h>
int main()
{
    char ch;
    printf("Enter a character:");
    scanf("%c",&ch);
    if((ch>='a'&& ch<='z')||(ch>='A'&& ch<='Z'))
    {
        printf("%c is a alphabet\n",ch);
        if(ch>='a'&& ch<='z')
```

```

{
    printf("%c is a lowercase alphabet.\n",ch);
}
else
{
    printf("%c is a uppercase alphabet.\n",ch);
}

}

else
{
    printf("%c is not a character",ch);

}
}

```

Output

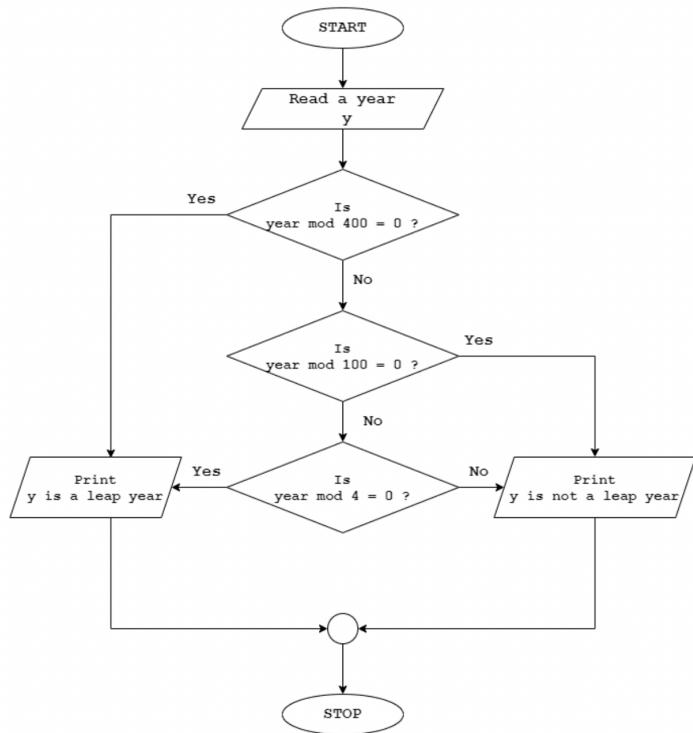
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

cd "/Users/nigam/Downloads/lap report of C/" && gcc hlo.c -o hlo && "/Users/nigam/Downloads/lap report of C/"hlo
nigam@Nigams-MacBook-Pro ~ % cd "/Users/nigam/Downloads/lap report of C/" && gcc hlo.c -o hlo && "/Users/nigam/Downloads/lap report of C/"hlo
Enter a character:A
A is a alphabet.
A is an uppercase alphabet.
nigam@Nigams-MacBook-Pro ~ %

5.WAP to check whether the year entered by the user is leap year or not.

Flowchart:

Flowchart to check if a year is a leap year or not



Code:-

```
#include<stdio.h>
int main()
{
    int year;
    printf("Enter a year and I will check whether it is a leap year or
not:");
    scanf("%d",&year);
    if (year%4==0 ||(year%100!=0 && year%400==0))
    {
        printf("%d is a leap year",year);
    }
    else
        printf("%d is not a leap year",year);

    return 0;
```

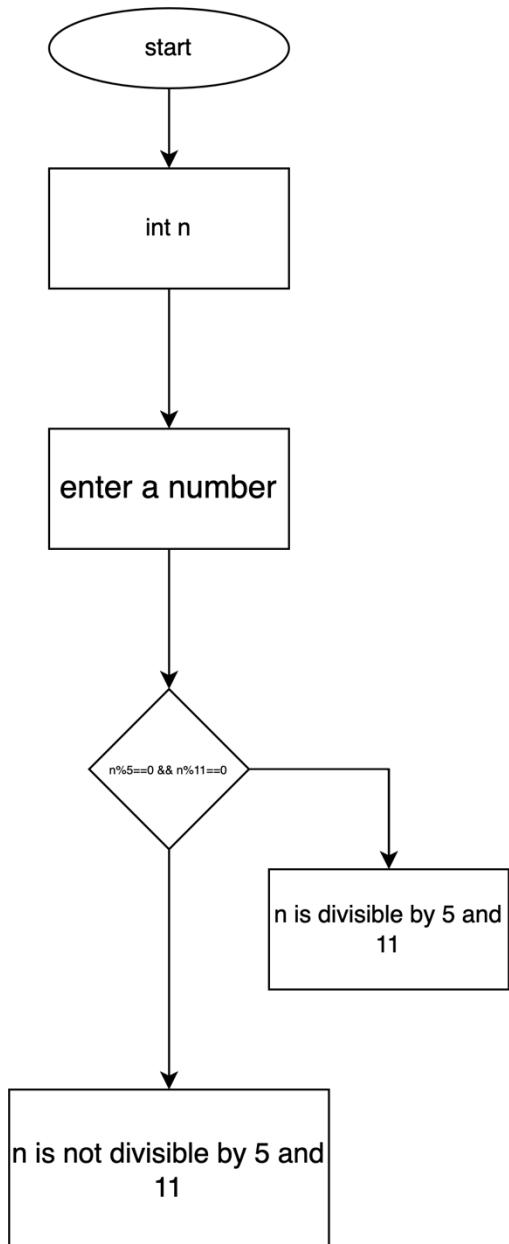
}

Output

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Code - lap report of C + ▾ □ ^ ×
cd "/Users/nigam/Downloads/lap report of C/" && gcc hlo.c -o hlo && "/Users/nigam/Downloads/lap report of C/"hlo
nigam@Nigams-MacBook-Pro ~ % cd "/Users/nigam/Downloads/lap report of C/" && gcc hlo.c -o hlo && "/Users/nigam/Downloads/lap report
of C/"hlo
Enter a year and I will check whether it is a leap year or not:2022
2022 is not a leap year
nigam@Nigams-MacBook-Pro ~ %
```

6.WAP to check whether the number entered by the user is divisible by the user is divisible by 5 and 11 or not.

Flowchart:



Code:-

```
#include<stdio.h>
int main()
{
    int n;
    printf("Enter a number:");
    scanf("%d",&n);
    if(n%5==0&&n%11==0)
        printf("%d is divisible by 5 and 11",n);
    else
        printf("%d is not divisible by 5 and 11",n);
    return 0;
}
```

Output

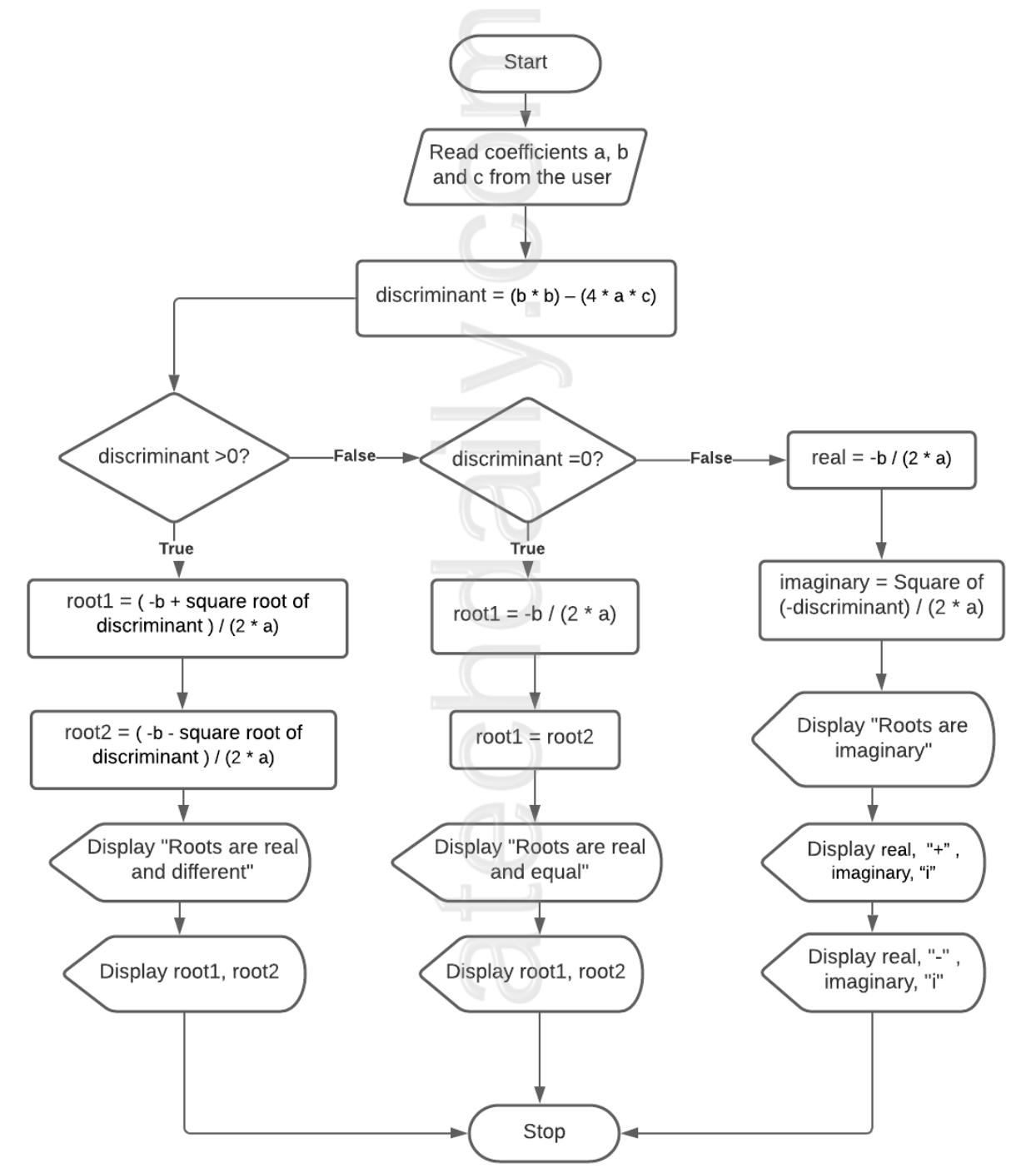
```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
```

Code - lap report of C + ×

```
cd "/Users/nigam/Downloads/lap report of C/" && gcc hlo.c -o hlo && "/Users/nigam/Downloads/lap report of C/">hlo  
nigam@Nigams-MacBook-Pro ~ % cd "/Users/nigam/Downloads/lap report of C/" && gcc hlo.c -o hlo && "/Users/nigam/Downloads/lap report of C/">hlo  
Enter a number:55  
55 is divisible by 5 and 11  
nigam@Nigams-MacBook-Pro ~ % cd "/Users/nigam/Downloads/lap report of C/" && gcc hlo.c -o hlo && "/Users/nigam/Downloads/lap report of C/">hlo  
Enter a number:50  
50 is not divisible by 5 and 11  
nigam@Nigams-MacBook-Pro ~ %
```

7.WAP to find the all the roots of a quadratic equation.

Flowchart:



Code:

```

#include<stdio.h>
#include<math.h>
int main()
{

```

```

double a,b,c,discriminant,root1,root2,real,img;
printf("Enter the values of a,b and c");
scanf("%lf%lf%lf",&a,&b,&c);
discriminant = b*b - 4.0 * a * c;
if(discriminant == 0)
{
    root1=root2= -b/(2.0*a);
    printf("Roots are real and equal\n");
    printf("root1=root2 =%lf",root1);

}
else if(discriminant>0)
{
    root1= (-b+ sqrt(discriminant))/(2.0*a);
    root2 = (-b- sqrt(discriminant))/(2.0*a);
    printf("Roots are real and unequal\n");
    printf("root1 = %lf+%lfi and root2 = %lf-%lfi",real,img,real,img);
}
return 0;
}

```

Output

```

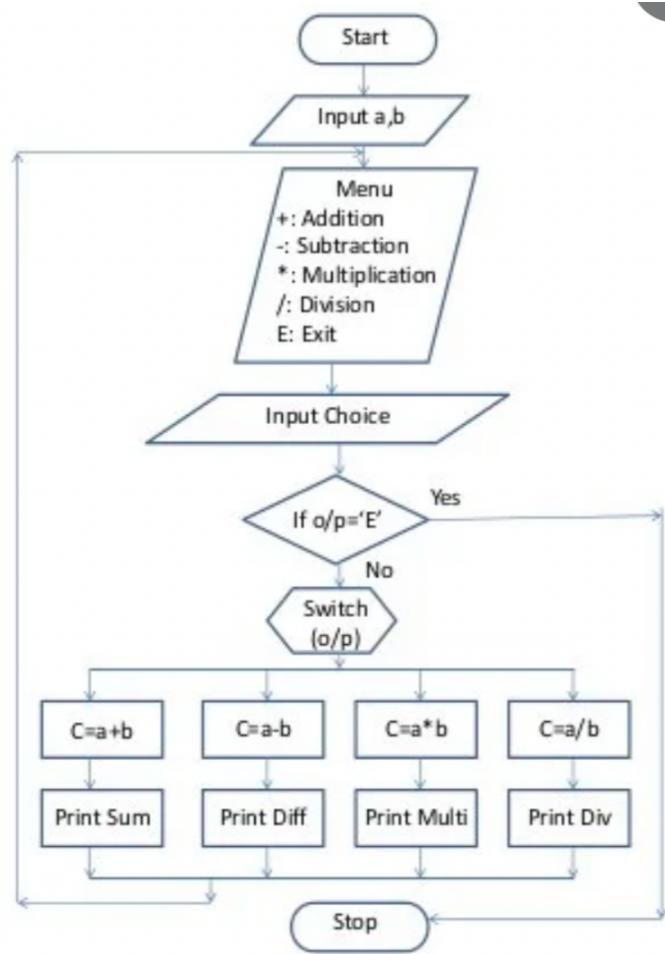
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Code - lap report of C + × ☰ □ ^ ×

cd "/Users/nigam/Downloads/lap report of C/" && gcc hlo.c -o hlo && "/Users/nigam/Downloads/lap report of C/" hlo
nigam@Nigams-MacBook-Pro Downloads % cd "/Users/nigam/Downloads/lap report of C/" && gcc hlo.c -o hlo && "/Users/nigam/Downloads/lap report of C/" hlo
nEnter the values of a,b and c 1
4
4
Roots are real and equal
root1=root2 =-2.000000
nigam@Nigams-MacBook-Pro ~ %

```

8.WAp to input two numbers and operator among [+,-,*,/]. If user enters + then the program should perform the addition of the number and display the sum. If users enters – then program should perform subtraction of numbers and display the difference and so on for * and /.

Flowchart:



Code:-

```

#include<stdio.h>
int main()
{
    float a,b,ans;
    char op;
    printf("Enter the values of a and b ");
    scanf("%f%f",&a,&b);
    printf("Enter + for addition\n Enter - for subtraction\n Enter * for
multiplication\n Enter / for division\n");
    scanf(" %c",&op);
    switch(op)
    {
        case '+':ans =a+b;
        printf("The sum of %f and %f is %f",a,b,ans);
        break;

        case '-':ans =a-b;

```

```
printf("The subtraction of %f and %f is %f",a,b,ans);
break;

case '*':ans =a*b;
printf("The product of %f and %f is %f",a,b,ans);
break;

case '/':ans =a/b;
printf("The quotient of %f and %f is %f",a,b,ans);
break;

default: printf("Invalid input");

}

return 0;
```

Output

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
```

Code - lap report of C + ×

```
cd "/Users/nigam/Downloads/lap report of C/" && gcc hlo.c -o hlo && "/Users/nigam/Downloads/lap report of C/hlo"
nigam@Nigams-MacBook-Pro ~ % cd "/Users/nigam/Downloads/lap report of C/" && gcc hlo.c -o hlo && "/Users/nigam/Downloads/lap report of C/hlo"
Enter the values of a and b 10
20
Enter + for addition
Enter - for subtraction
Enter * for multiplication
Enter / for division
*
The product of 10.000000 and 20.000000 is 200.000000
nigam@Nigams-MacBook-Pro ~ %
```

9.WAP in C to input marks of five subjects C-programming, Physics, Math, Applied Mechanics and Basic electrical. Display the student passed or failed. Take F.M.=100 and P.M.=40 For passed students calculate percentage and grade according to following:

Percentage $\geq 90\%$: A

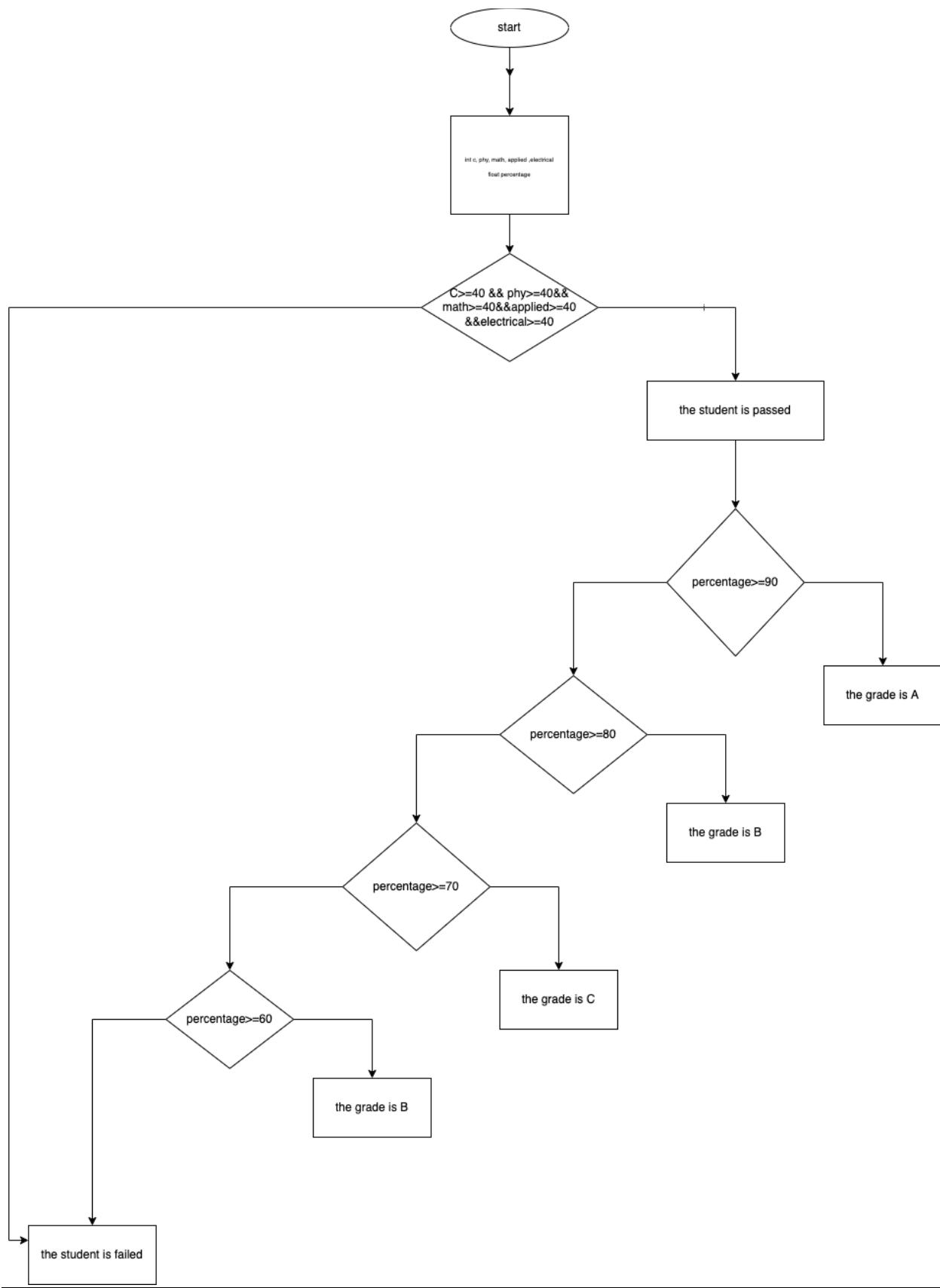
Percentage $\geq 80\%$: B

Percentage $\geq 70\%$: C

Percentage $\geq 60\%$: D

Percentage $\geq 40\%$: E

Flowchart:



Code:-

```
#include<stdio.h>
int main()
{
    int C, phy,math,applied,elecrical;
    float percentage;
    printf("Enter the marks obtain in C-programmming,Physics,Maths,Applied mechanics and basic electrical: ");
    scanf("%d%d%d%d",&C,&phy,&math,&applied,&elecrical);
    if(C>=40 && phy>=40 && math>=40 && applied>=40 && elecrical>=40)
    {
        printf("the student is passed\n");
        percentage = (C+phy+math+applied+elecrical)/5;
        printf("the percentage is %f\n",percentage);
        if(percentage>=90)
            printf("the grade is A\n");
        else if(percentage>=80)
            printf("the grade is B\n");
        else if(percentage>=70)
            printf("the grade is C\n");
        else if(percentage>=60)
            printf("the grade is D\n");
        else if(percentage>=40)
            printf("the grade is E\n");
    }
    else
        printf("the student is failed");
    return 0;
}
```

Output

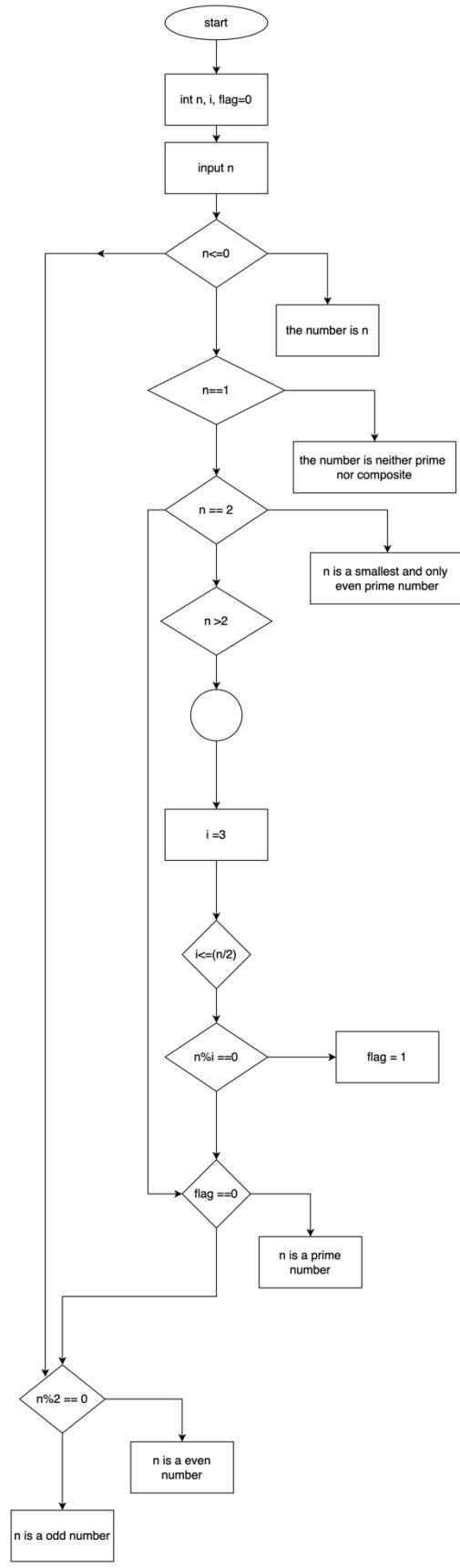
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

Code - lap report of C + √ ☰ ^ X

```
cd "/Users/nigam/Downloads/lap report of C/" && gcc hlo.c -o hlo && "/Users/nigam/Downloads/lap report of C/"hlo
nigam@Nigams-MacBook-Pro Downloads % cd "/Users/nigam/Downloads/lap report of C/" && gcc hlo.c -o hlo && "/Users/nigam/Downloads/lap report of C/"hlo
Enter the marks obtain in C-programmming,Physics,Maths,Applied mechanics and basic electrical: 50
60
78
99
76
the student is passed
the percentage is 72.000000
the grade is C
nigam@Nigams-MacBook-Pro lap report of C %
```

10.WAP to input a number from user. If user enters a number less than or equal to zero then program should just display the number. If the user enters 1 the program should display output as neither prime or composite, if the user enters 2 the program should display output as smallest and only even prime number. If user enters any number greater than 2 the program should check whether the number is prime or not, also if the number is not prime the program should display whether it is even or odd.

Flowchart:

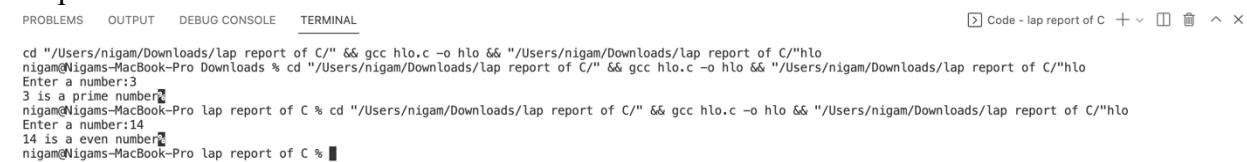


Code:-

```
#include<stdio.h>
int main()
{
    int n,i,flag=0;
    printf("Enter a number:");
    scanf("%d",&n);
    if(n<=0)
        printf("the number is %d",n);
    else if(n==1)
        printf("the number is neither prime nor composite");
    else if(n==2)
        printf("%d is a smallest and only even prime number",n);
    else if(n>2)
    {
        for(i=3;i<=(n/2);i++)
        {
            if(n%i==0)
            {
                flag=1;
                break;
            }
        }
    }
    if(flag==0)
        printf("%d is a prime number",n);
    else
    {
        if(n%2==0)
        {
            printf("%d is a even number",n);
        }
        else
            printf("%d is a odd number",n);
    }
}
```

```
    }  
  
    return 0;  
}
```

Output



```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
```

```
cd "/Users/nigam/Downloads/lap report of C/" && gcc hlo.c -o hlo && "/Users/nigam/Downloads/lap report of C/"hlo  
nigam@Nigams-MacBook-Pro Downloads % cd "/Users/nigam/Downloads/lap report of C/" && gcc hlo.c -o hlo && "/Users/nigam/Downloads/lap report of C/"hlo  
Enter a number:3  
3 is a prime number  
nigam@Nigams-MacBook-Pro lap report of C % cd "/Users/nigam/Downloads/lap report of C/" && gcc hlo.c -o hlo && "/Users/nigam/Downloads/lap report of C/"hlo  
Enter a number:14  
14 is a even number  
nigam@Nigams-MacBook-Pro lap report of C %
```

Conclusion:-

After completing this lab sheet, I got so many knowledge and learn how to recognize error and eliminate them. In this report, all the question are logic based so it helps me to improve my logical concept and logic building technique. It taught to use control statement, loop and nested if else while solving different problems.....