



Far-Western university

Department of engineering

LAB REPORT

Programming in c

Submitted by:

Name: Manoj Joshi

Symbol no: **8110380**

Instructor:

Birendra Singh Dhami

Q1: Write a program to display hello world.

Algorithm:-

Step 1: start

Step 2: display hello world

Step 3: stop

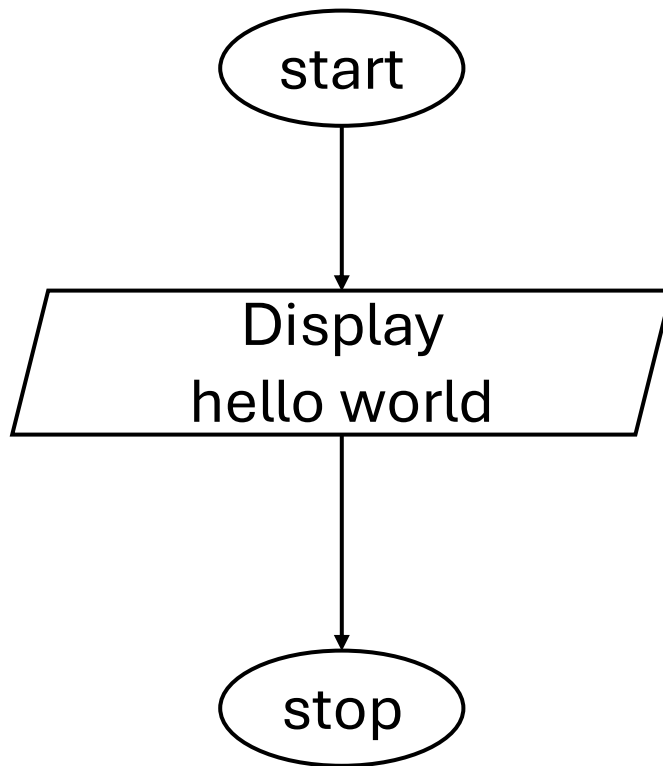
code:-

```
1  #include<stdio.h>
2
3  int main(){
4      printf("hello world");
5  return 0;
6  }
```

Output:-

Hello world

Flow chart:-



Q2: write a program to calculate simple interest.

Algorithm:-

Step 1: start

Step 2: declare variables l,p,t and r

Step 3: input value of p, t, r

Step 4: calculate simple interest, $l = (p * t * r) / 100$

Step 5: display value of l

Step 6: stop

code:-

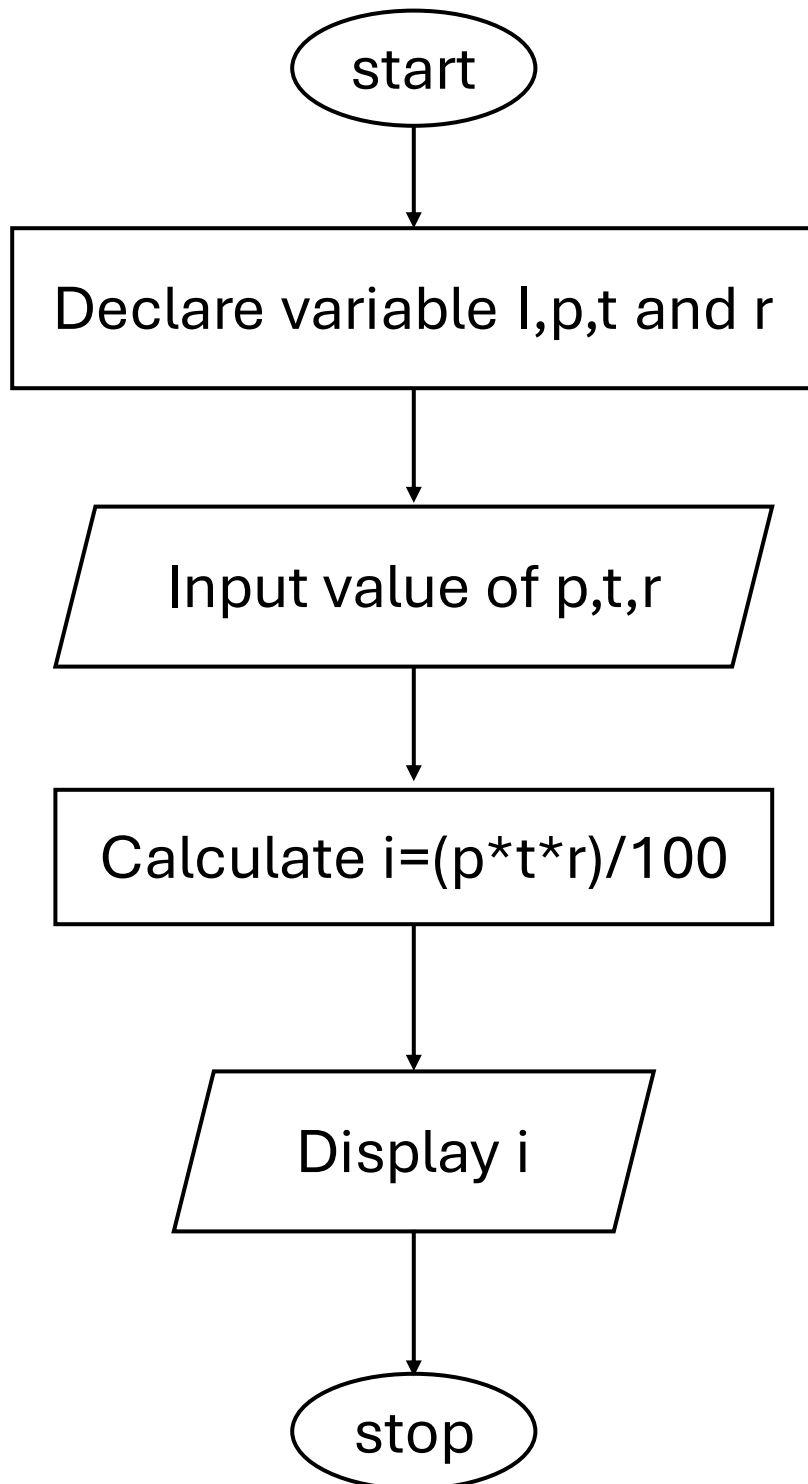
```
1  #include<stdio.h>
2
3  int main(){
4      int p,t,r,i;
5      printf("enter value of p,t,r");
6      scanf("%d%d%d",&p,&t,&r);
7      i = (p*t*r)/100;
8      printf("interest: %d",i);
9      return 0;
10 }
```

Output:-

Enter value of p,t,r 100 10 10

Interest: 100

Flow chart:-



Q3: Write a program to show use of various operators.

Algorithm:-

Step 1: start

Step 2: input any 5 numbers, a=8, b=2, c=3, d=5, e=7

Step 3: perform all arithmetic operations, +, -, *, /, %

Step 4: perform relational operation using a,b,c,d,e

Step 5: perform logical operation using a,b,c,d,e

Step 6: display the result

Step 7: stop

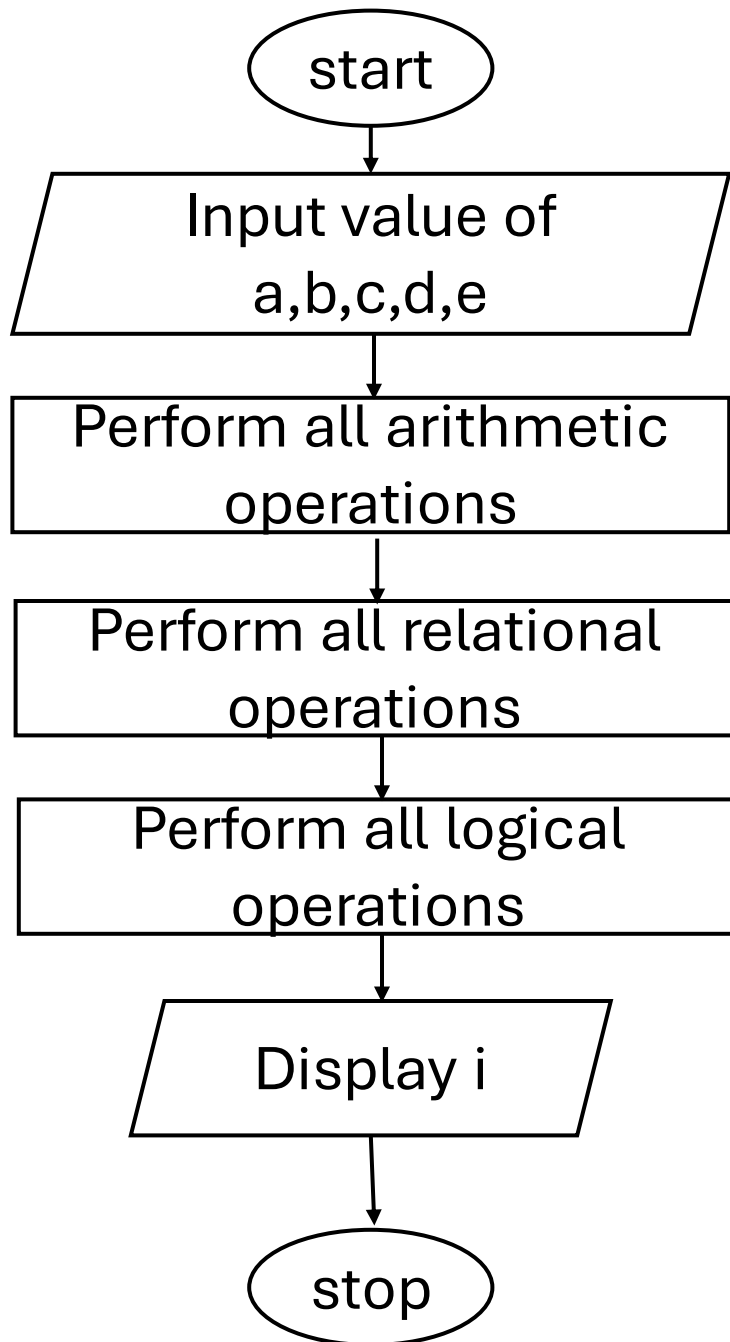
code:-

```
1  #include<stdio.h>
2
3  int main(){
4      int a=8, b=2, c=3, d=5, e=7;
5
6      printf("a + b = %d\n", a+b);
7      printf("a - b = %d\n", a-b);
8      printf("a * b = %d\n", a*b);
9      printf("a / b = %d\n", a/b);
10     printf("a % b = %d\n", a%b);
11     printf("c < d = %d\n", c<d);
12     printf("c > d = %d\n", c>d);
13     printf("c ≤ d = %d\n", c≤d);
14     printf("c ≥ d = %d\n", c≥d);
15     printf("a>b && c>b = %d\n", a>b&& c>d);
16     printf("a>b || c>b = %d\n", a>b || c>d);
17     printf("not (a ≥ b) = %d", !(a ≥ b));
18
19     return 0;
20 }
```

Output:-

```
a + b = 10
a - b = 6
a * b = 16
a / b = 4
a b = 0
c < d = 1
c > d = 0
c <= d = 1
c >= d = 0
a>b && c>b = 0
a>b || c>b = 1
not (a>=b) = 0
```

Flow chart:-



Q4: WAP to print integers and different real numbers using different format specifiers.

Algorithm:-

Step 1: start

Step 2: Declare the variable a and b

step 3: Input the value of a and b

step 4: Perform the different cases
using different format specifiers.

step 5: Display the result

step 6: stop

code:-

```
1  #include<stdio.h>
2
3  int main(){
4      int a=12345;
5      float b=678.123;
6
7      printf("case 1 a=%d\n",a);
8      printf("case 2 a=%10d\n",a);
9      printf("case 3 a=%-10d\n",a);
10     printf("case 4 a=%012d\n",a);
11     printf("case 5 b=%f\n",b);
12     printf("case 6 b=%15.2f\n",b);
13     printf("case 7 b=%015.3f\n",b);
14     printf("case 8 b=%-16.3f\n",b);
15
16     return 0;
17 }
```

Output:-

case 1 a=12345

case 2 a= 12345

case 3 a=12345

case 4 a=000000012345

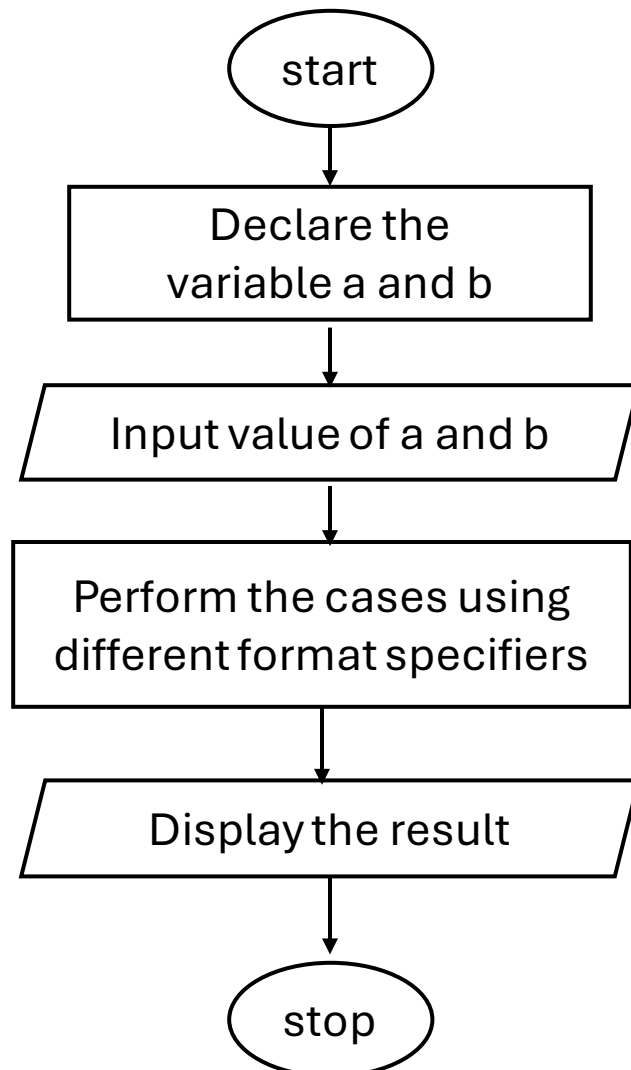
case 5 b=678.122986

case 6 b= 678.12

case 7 b=00000000678.123

case 8 b=678.123

Flow chart:-



Q5: WAP that ask 1 operator and 2 operands and perform corresponding operation

Algorithm:-

Step 1: start

Step 2: Declare variable a, b, c and ch

Step 3: Input value of a and b

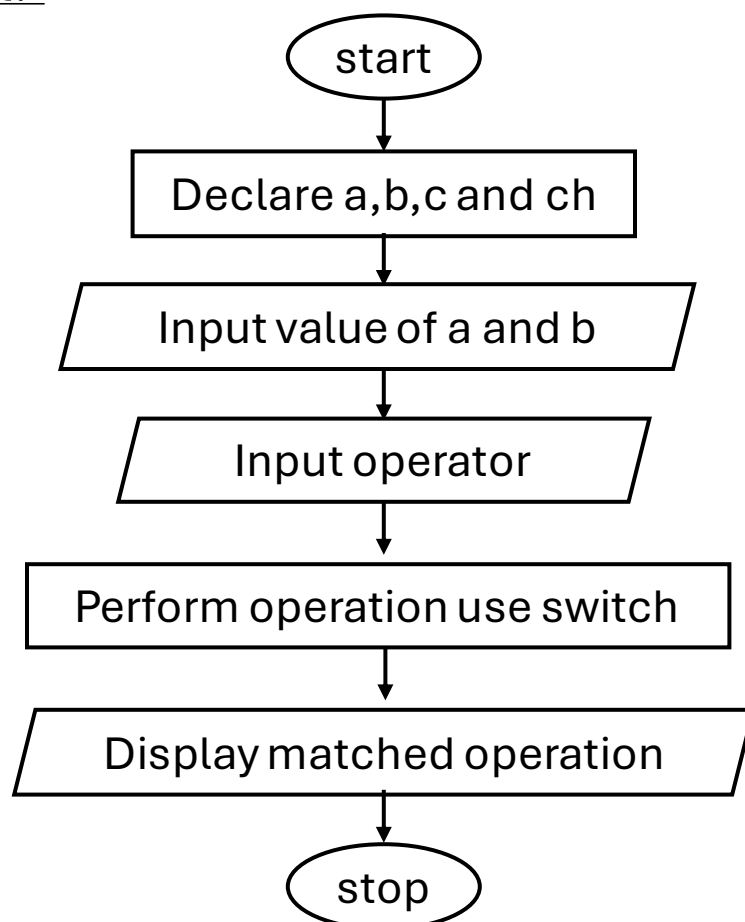
Step 4: Input arithmetic operator

Step 5: Perform arithmetic operation use switch

Step 6: Display operation matched

Step 7: stop

Flow chart:-



code:-

```
1  #include<stdio.h>
2
3  int main(){
4      char ch;
5      int a,b,c;
6
7      printf("enter two integers: ");
8      scanf("%d%d",&a,&b);
9      printf("enter arithmetic operator (+,-,*,/,): ");
10     scanf(" %c",&ch);
11
12     switch (ch)
13     {
14     case '+':
15         printf("sum = %d", a+b);
16         break;
17     case '-':
18         printf("difference = %d", a-b);
19         break;
20     case '*':
21         printf("product = %d", a*b);
22         break;
23     case '/':
24         printf("quotient = %f", (float)a/b);
25         break;
26     default:
27         printf("wrong operator:");
28         break;
29     }
30     return 0;
31 }
```

Output:-

enter two integers: 10 5

enter arithmetic operator (+,-,*,/,): +

sum = 15

Q6: WAP to display multiplication table of given number

Algorithm:-

Step 1: start

Step 2: declare variable a and i

step 3: Input the value of a and i=1

step 4: perform product of a*i

step 5: increment i and goto step 4 until i<=10

step 6: display multiplication table

Step 7: stop

code:-

```
1  #include<stdio.h>
2
3  int main(){
4      int a;
5      printf("enter any number: ");
6      scanf("%d",&a);
7      for (int i = 1; i ≤ 10; i++)
8      {
9          printf("%d x %d = %d\n",a,i,a*i);
10     }
11     return 0;
12 }
```

output:-

enter any number: 5

$$5 \times 1 = 5$$

$$5 \times 2 = 10$$

$$5 \times 3 = 15$$

$$5 \times 4 = 20$$

$$5 \times 5 = 25$$

$$5 \times 6 = 30$$

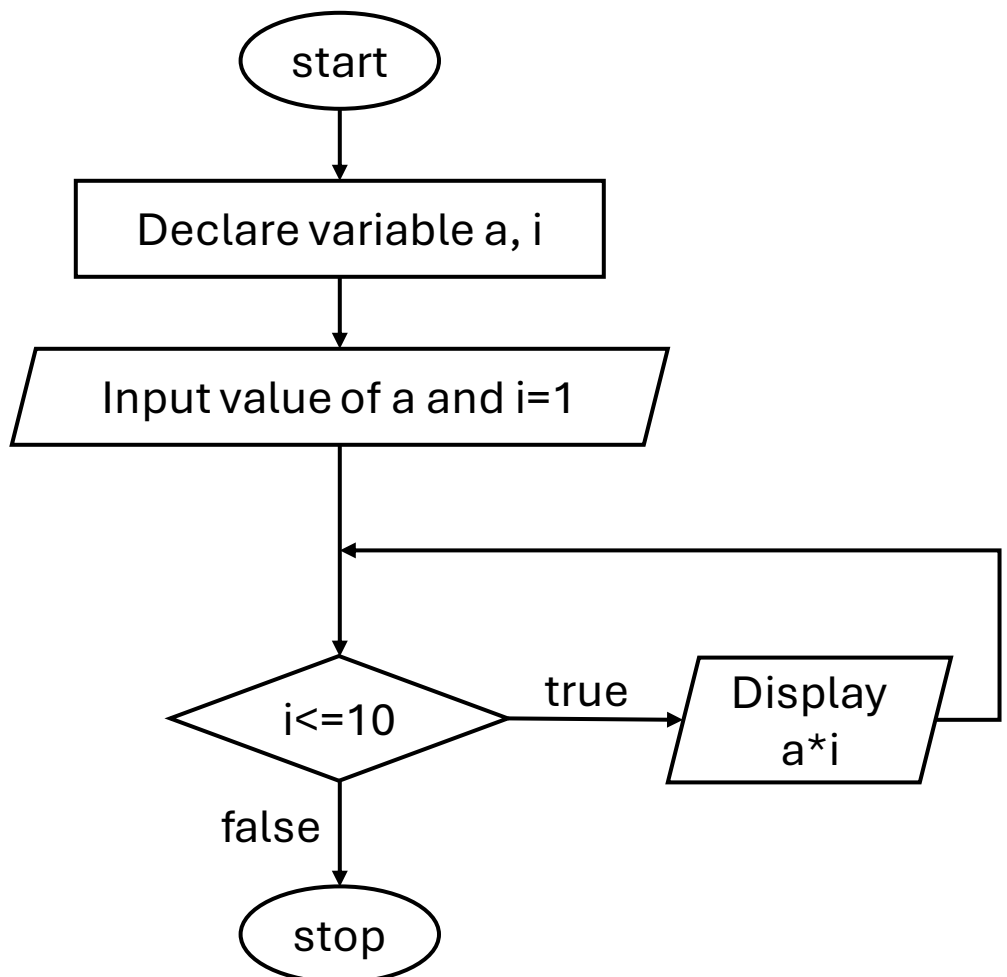
$$5 \times 7 = 35$$

$$5 \times 8 = 40$$

$$5 \times 9 = 45$$

$$5 \times 10 = 50$$

Flow chart:-



Q7: WAP to calculate factorial of number

Algorithm:-

Step 1: start

Step 2: declare variable n,i and fact

step 3: Input the value of n and i=1

step 4: calculate, fact*=i

step 5: increment i and go to step 4 until i<=n

step 6: display fact

Step 7: stop

code:-

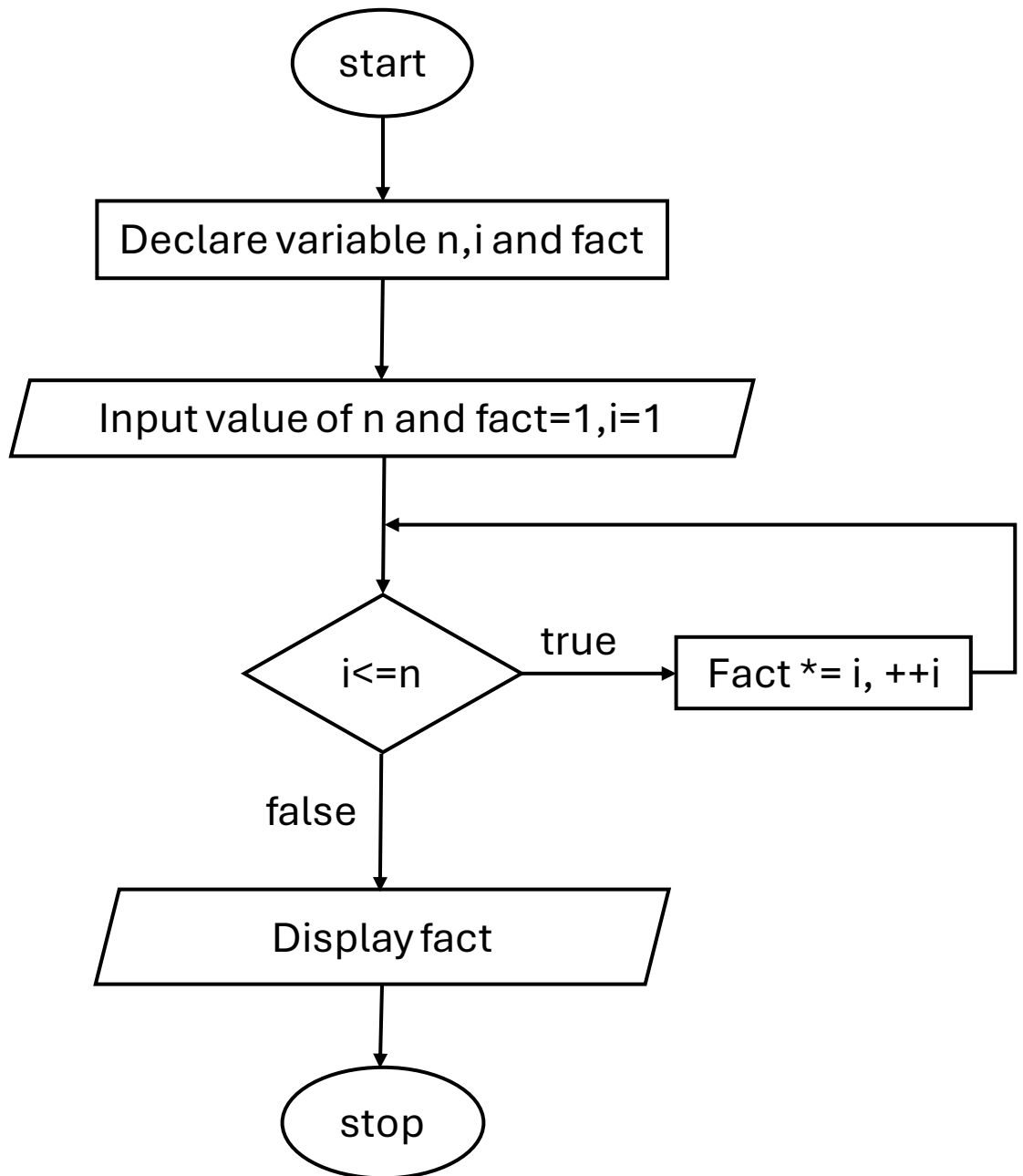
```
1  #include<stdio.h>
2
3  int main(){
4      int n,fact=1;
5      printf("enter number: ");
6      scanf("%d",&n);
7      for (int i = 1; i ≤ n; ++i)
8      {
9          fact *= i;
10     }
11     printf("factorial: %d",fact);
12     return 0;
13 }
```

output:-

enter number: 3

factorial: 6

Flow chart:-



Q8: WAP to calculate sum of 2 numbers using pass by value of function

Algorithm:-

Step 1: start

Step 2: declare variable a,b and c

step 3: Input the value of a and b

step 4: calculate c=sum(a,b)

step 5: display c

step 6: stop

code:-

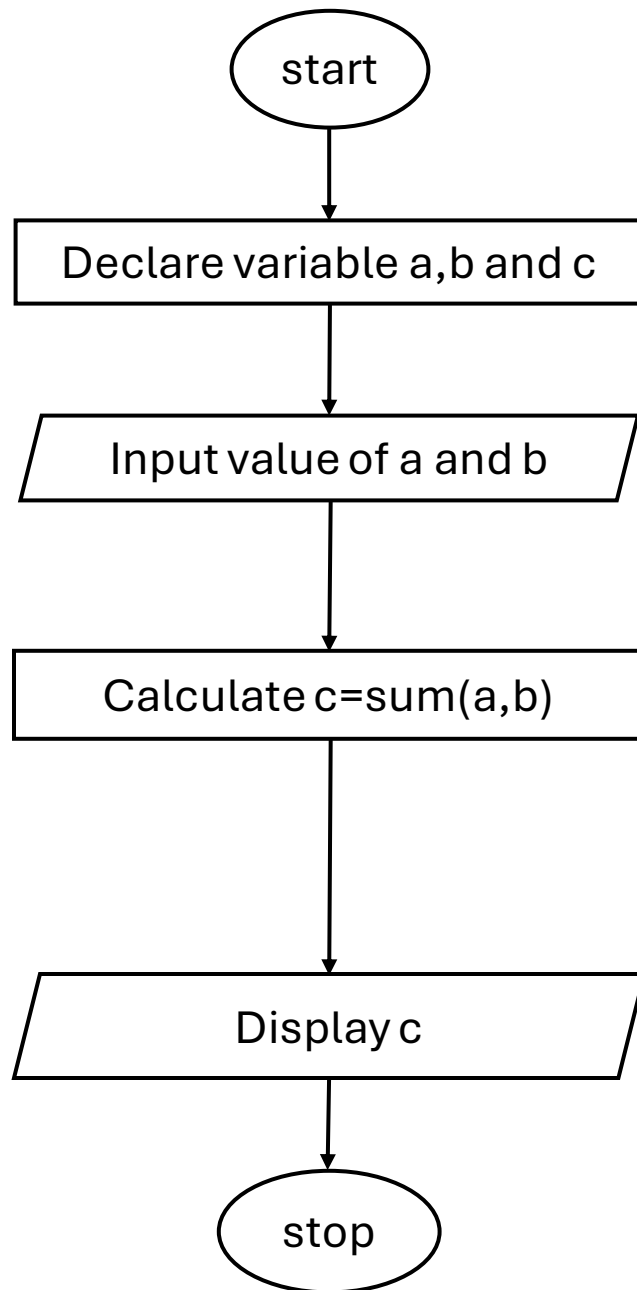
```
1  #include<stdio.h>
2
3  int sum(int,int);
4
5  int main(){
6      int a,b,c;
7      printf("enter value of a and b: ");
8      scanf("%d%d",&a,&b);
9      c=sum(a,b);
10     printf("sum: %d",c);
11     return 0;
12 }
13
14 int sum(int x,int y){
15     return x+y;
16 }
```

output:-

enter value of a and b: 5 6

sum: 11

Flow chart:-



Q9: WAP to swap 2 numbers using pass by reference of function

Algorithm:-

Step 1: start

Step 2: declare variable a and b

step 3: Input the value of a and b

step 4: execute swap(&a,&b)

step 5: display swapped values

step 6: stop

code:-

```
1  #include <stdio.h>
2
3  void swap(int *x, int *y) {
4      int temp = *x;
5      *x = *y;
6      *y = temp;
7  }
8
9  int main() {
10     int a, b;
11     printf("enter value of a and b: ");
12     scanf("%d%d",&a,&b);
13     printf("Before swapping: a = %d, b = %d\n", a, b);
14     swap(&a, &b);
15     printf("After swapping: a = %d, b = %d\n", a, b);
16     return 0;
17 }
```

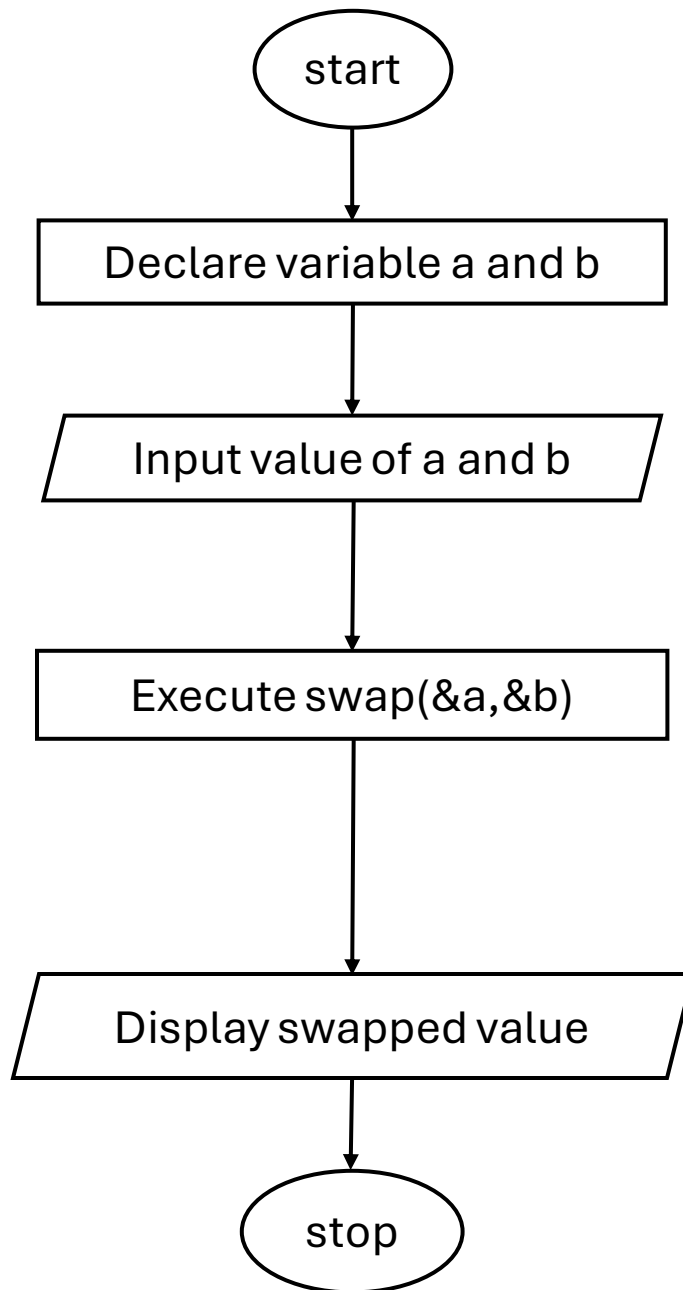
output:-

enter value of a and b: 5 6

Before swapping: a = 5, b = 6

After swapping: a = 6, b = 5

Flow chart:-



Q10: WAP to calculate addition of 2 matrices using 2d array.

Algorithm:-

Step 1: start

Step 2: Declares variable, A, B, C, r, r2, c1, c2, l, j

Step 3: Input value of r1, r2, c1, c2

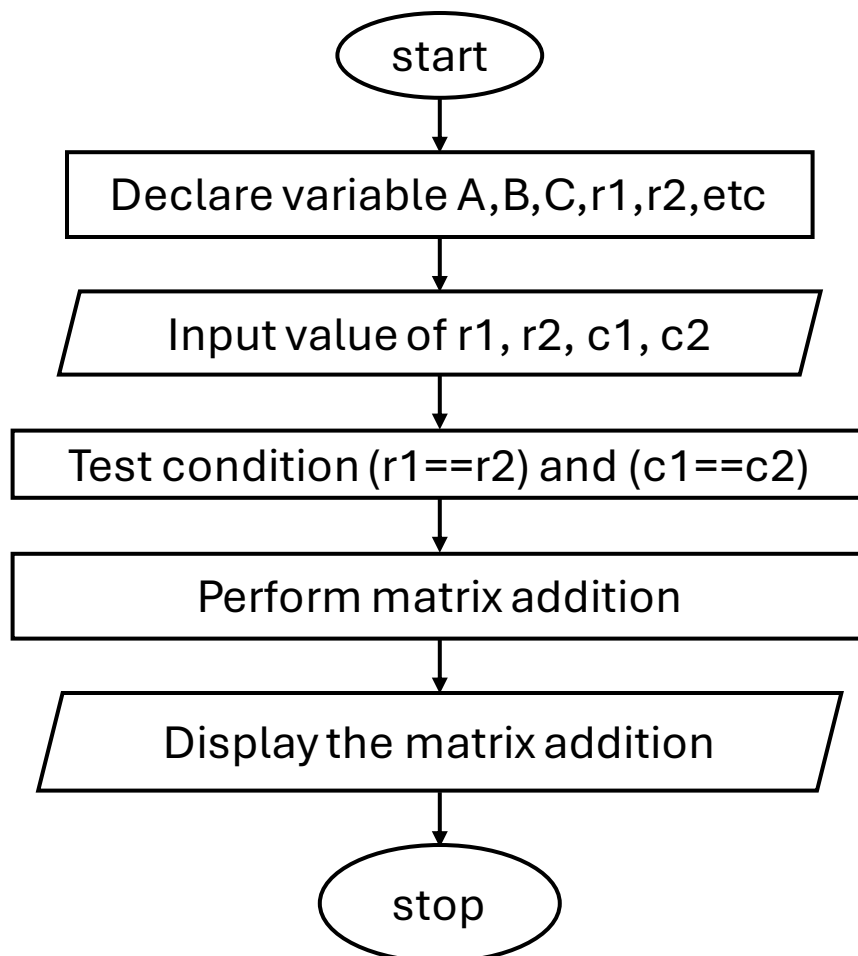
Step 4: Test condition (r1==r2) and (c1==c2)

Step 5: Perform matrix addition

Step 6: Display matrix addition

Step 7: stop

Flow chart:-



code:-

```
1  #include<stdio.h>
2
3  int main(){
4      int i,j,A[10][10],B[10][10],C[10][10],r1,r2,c1,c2;
5      printf("enter row and column of matrix A: ");
6      scanf("%d%d",&r1,&c1);
7      printf("enter row and column of matrix B: ");
8      scanf("%d%d",&r2,&c2);
9      if ((r1==r2)&&(c1==c2))
10     {
11         for (i = 0; i < r1; i++){
12             for (j = 0; j < c1; j++){
13                 scanf("%d",&A[i][j]);
14             }
15
16             for (i = 0; i < r2; i++){
17                 for (j = 0; j < c2; j++){
18                     scanf("%d",&B[i][j]);
19                 }
20
21                 printf("addition of A and B: \n");
22                 for (i = 0; i < r1; i++){
23                     for (j = 0; j < c1; j++){
24                         C[i][j] = A[i][j] + B[i][j];
25                         printf("%d\t",C[i][j]);
26                     }
27                     printf("\n");
28                 }
29             }else{
30                 printf("array size mismatched.");
31             }
32     }
33     return 0;
34 }
```

Q11: WAP to write in a file character by character

code:-

```
1  #include<stdio.h>
2  #include<string.h>
3  #include<stdlib.h>
4
5  int main(){
6      FILE *fp;
7      char s[] = "i love nepal";
8      fp = fopen("myfile.txt","w");
9      if (fp==NULL){
10         printf("file cannot be created and not opened.");
11         exit(1);
12     }
13     for (int i = 0; i < strlen(s); i++)
14     {
15         fputc(s[i],fp);
16     }
17     fclose(fp);
18     return 0;
19 }
```

output:-

New file is created: myfile.txt with “I love Nepal” inside

Q12: WAP to read data from myfile.txt

code:-

```
1  #include<stdio.h>
2  #include<stdlib.h>
3
4  int main(){
5      FILE *fp;
6      char ch;
7      fp = fopen("myfile.txt","r");
8      if (fp==NULL){
9          printf("file not found.");
10         exit(1);
11     }
12     ch=getc(fp);
13     while (!feof(fp))
14     {
15         printf("%c",ch);
16         ch=fgetc(fp);
17     }
18     fclose(fp);
19     return 0;
20 }
```

output:-

I love nepal