1.

#include <stdio.h>

int main() {

int n1,n2,n3;

int sum=0;

printf("enter n1:");

scanf("%d",&n1);

printf("enter n2:");

scanf("%d",&n2);

printf("enter n3:");

scanf("%d",&n3);

printf("sum is %d",sum=n1+n2+n3);

return 0;

}

o/p:

enter n1:10

enter n2:20

enter n3:10

sum is 40

2.

#include <stdio.h>

int main() {

int n1,n2,n3;

int sum=0;

printf("enter n1:");

scanf("%d",&n1);

printf("enter n2:");

scanf("%d",&n2);

printf("enter n3:");

scanf("%d",&n3);

printf("sum is %d",sum=n1+n2+n3);

return 0;

}

o/p:

enter n1:1

enter n2:2

enter n3:3

sum is 6

3.

#include <stdio.h>

int main() {

int n,fact=1;

printf("enter n:");

scanf("%d",&n);

for(int i=1;i<=n;i++){

fact\*=i;

}

printf("fact of number is %d",fact);

return 0;

}

o/p:

enter n:5

fact of number is 120

4.

#include <stdio.h>

double series\_sum(int n) {

double sum = 0.0;

for (int i = 1; i <= n; i++) {

if (i % 2 == 0)

sum -= 1.0 / i; // Subtract if even

else

sum += 1.0 / i; // Add if odd

}

return sum;

}

int main() {

int n;

printf("Enter n number: ");

scanf("%d", &n);

double result = series\_sum(n);

printf("Sum of the series: %lf\n", result);

return 0;

}

5.

#include<stdio.h>

int multiply(int a,int b){

if(b==0){

return 0;

}

if(b>0){

return a + multiply(a,b-1);

}

return -multiply(a,-b);

}

int main(){

int n1,n2;

printf("enter n1:");

scanf("%d",&n1);

printf("enter n2:");

scanf("%d",&n2);

printf("multiplication of %d and %d is %d\n",n1,n2,multiply(n1,n2));

return 0;

}

o/p:

enter n1:5

enter n2:3

multiplication of 5 and 3 is 15

6.

#include<stdio.h>

#include<math.h>

int main(){

int a,b;

printf("enter base(a):");

scanf("%d",&a);

printf("enter exp(b):");

scanf("%d",&b);

int power=pow(a,b);

printf("power of %d and %d is %d\n",a,b,power);

}

o/p:

enter base(a):3

enter exp(b):5

power of 3 and 5 is 243

Write the following programs, using while loop, with counting based logic :

1.

#include<stdio.h>

int main(){

int num;

printf("enter num:");

scanf("%d",&num);

while(1){

if(num%2==0){

printf("num is even\n");

break;

}

else{

printf("num is odd");

break;

}

}

}

o/p:

enter num:5

num is odd

enter num:10

num is even

2.

#include <stdio.h>

int main(){

char ch;

printf("enter char:");

scanf("%c",&ch);

while(1){

if(ch=='a' || ch=='e' || ch=='i' || ch=='o' || ch=='u' || ch=='A' || ch=='E' || ch=='O' || ch=='U'){

printf("the given character is vowel");

break;

}

else{

printf("the given character is not vowel");

break;

}

}

}

o/p:

enter char:b

the given character is a not vowel

enter char:i

the given character is a vowel

3.

#include <stdio.h>

int main(){

char ch;

printf("enter a char:");

scanf("%c",&ch);

while(1){

if(ch>='a' && ch<='z'){

printf("the given char is small alphabet");

break;

}

else if(ch>='A'&& ch<='Z'){

printf("the given char is capital alphabet");

break;

}

else{

printf("the given char is special character");

break;

}

}

}

o/p:

enter a char:a

the given char is small alphabet

enter a char:?

the given char is special character

enter a char:A

the given char is capital alphabet

4.

#include <stdio.h>

int main() {

int n1,n2;

printf("enter n1:");

scanf("%d",&n1);

printf("enter n2:");

scanf("%d",&n2);

if(n1>n2){

printf("the entered number is smaller than previous one");

}

else{

printf("the entered number is greater than previous one");

}

return 0;

}

o/p:

enter n1:5

enter n2:6

the entered number is greater than previous one

enter n1:6

enter n2:5

the entered number is smaller than previous one

5.

#include<stdio.h>

int main(){

int n1,n2,n3,n4,n5;

int count1,count2,count3;

printf("enter n1:");

scanf("%d",&n1);

printf("enter n2:");

scanf("%d",&n2);

printf("enter n3:");

scanf("%d",&n3);

printf("enter n4:");

scanf("%d",&n4);

printf("enter n5:");

scanf("%d",&n5);

if(n2>n1){

count1=1;

}

if(n4>n3){

count2=1;

}

if(n5>n4){

count3=1;

}

printf("count is %d",count1+count2+count3);

}

o/p:

enter n1:3

enter n2:4

enter n3:2

enter n4:6

enter n5:8

count is 3

6.

#include<stdio.h>

int main(){

int n1,n2,n3,n4,n5;

printf("enter n1:");

scanf("%d",&n1);

printf("enter n2:");

scanf("%d",&n2);

printf("enter n3:");

scanf("%d",&n3);

printf("enter n4:");

scanf("%d",&n4);

printf("enter n5:");

scanf("%d",&n5);

int min=n1;

if(n2<min){

min=n2;

}

else if(n3<min){

min=n3;

}

else if(n4<min){

min=n4;

}

else{

min=n5;

}

printf("%d is smallest\n",min);

}

o/p:

enter n1:3

enter n2:4

enter n3:2

enter n4:6

enter n5:8

2 is smallest

7.

#include <stdio.h>

int main() {

int n,i;

printf("enter n:");

scanf("%d",&n);

for(int i=1;i<=10;i++){

printf("%d \* %d is %d\n",n,i,n\*i);

}

}

o/p:

enter n:2

2 \* 1 is 2

2 \* 2 is 4

2 \* 3 is 6

2 \* 4 is 8

2 \* 5 is 10

2 \* 6 is 12

2 \* 7 is 14

2 \* 8 is 16

2 \* 9 is 18

2 \* 10 is 20

enter n:5

5 \* 1 is 5

5 \* 2 is 10

5 \* 3 is 15

5 \* 4 is 20

5 \* 5 is 25

5 \* 6 is 30

5 \* 7 is 35

5 \* 8 is 40

5 \* 9 is 45

5 \* 10 is 50

8.

#include <stdio.h>

int main() {

int sub1\_1, sub2\_1, sub3\_1, sub4\_1, sub5\_1, sub6\_1; // Marks for Student 1

int sub1\_2, sub2\_2, sub3\_2, sub4\_2, sub5\_2, sub6\_2; // Marks for Student 2

int total1, total2;

float avg1, avg2; // Use float for correct decimal output

// Input marks for Student 1

printf("Enter marks for 6 subjects of Student 1:\n");

scanf("%d %d %d %d %d %d", &sub1\_1, &sub2\_1, &sub3\_1, &sub4\_1, &sub5\_1, &sub6\_1);

// Input marks for Student 2

printf("Enter marks for 6 subjects of Student 2:\n");

scanf("%d %d %d %d %d %d", &sub1\_2, &sub2\_2, &sub3\_2, &sub4\_2, &sub5\_2, &sub6\_2);

// Calculate total and average for each student

total1 = sub1\_1 + sub2\_1 + sub3\_1 + sub4\_1 + sub5\_1 + sub6\_1;

total2 = sub1\_2 + sub2\_2 + sub3\_2 + sub4\_2 + sub5\_2 + sub6\_2;

avg1 = (float)total1 / 6;

avg2 = (float)total2 / 6;

// Determine the topper

if (total1 > total2) {

printf("Topper student ID is: 1\n");

} else if (total2 > total1) {

printf("Topper student ID is: 2\n");

} else {

printf("Both students have the same marks!\n");

}

// Print results

printf("Total marks of Student 1: %d\n", total1);

printf("Percentage of Student 1: %.2f%%\n", avg1);

printf("Total marks of Student 2: %d\n", total2);

printf("Percentage of Student 2: %.2f%%\n", avg2);

return 0;

}

o/p:

Enter marks for 6 subjects of Student 1:

40

45

50

75

60

55

Enter marks for 6 subjects of Student 2:

45

65

55

80

40

55

Topper student ID is: 2

Total marks of Student 1: 325

Percentage of Student 1: 54.17%

Total marks of Student 2: 340

Percentage of Student 2: 56.67%

9.

#include <stdio.h>

int main() {

int n1, n2;

printf("enter n1:");

scanf("%d", &n1);

printf("enter n2:");

scanf("%d", &n2);

for(int i = 10;i <= 20;i++){

printf("%02d ", i);

}

printf("\n");

return 0;

}

o/p:

enter n1:10

enter n2:20

10 11 12 13 14 15 16 17 18 19 20

10.

#include <stdio.h>

int main() {

int n, num1, num2;

char operator;

// Get the number of times the operation should repeat

printf("Enter number of operations (n): ");

scanf("%d", &n);

// Loop n times to repeat the task

for (int i = 0; i < n; i++) {

// Get input for two numbers and an operator

printf("Enter two numbers:\n");

scanf("%d %d", &num1, &num2);

printf("Enter an operator (+, -, \*, /, %%): ");

scanf(" %c", &operator); // Use space before %c to capture any leftover newline character

// Perform operation based on the operator

switch (operator) {

case '+':

printf("Result of %d + %d is %d\n", num1, num2, num1 + num2);

break;

case '-':

printf("Result of %d - %d is %d\n", num1, num2, num1 - num2);

break;

case '\*':

printf("Result of %d \* %d is %d\n", num1, num2, num1 \* num2);

break;

case '/':

if (num2 != 0) {

printf("Result of %d / %d is %.2f\n", num1, num2, (float)num1 / num2);

} else {

printf("Error: Division by zero is not allowed.\n");

}

break;

case '%':

if (num2 != 0) {

printf("Result of %d %% %d is %d\n", num1, num2, num1 % num2);

} else {

printf("Error: Division by zero is not allowed.\n");

}

break;

default:

printf("Invalid operator!\n");

}

}

return 0;

}

o/p:

Enter number of operations (n): 2

Enter two numbers:

5

4

Enter an operator (+, -, \*, /, %): +

Result of 5 + 4 is 9

Enter two numbers:

4

3

Enter an operator (+, -, \*, /, %): -

Result of 4 - 3 is 1

11.

#include <stdio.h>

int main() {

int n1,n2;

printf("enter n1:");

scanf("%d", &n1);

printf("enter n2:");

scanf("%d", &n2);

printf("even numbers are:\n",n1,n2);

for(int i = n1;i <= n2;i++){

if(i %2 ==0){

printf("%02d ",i);

}

}

printf("\n");

printf("odd numbers are:\n",n1,n2);

for(int i = n1;i <= n2;i++){

if(i %2 ==1){

printf("%02d ",i);

}

}

printf("\n");

return 0;

}

o/p

enter n1:10

enter n2:20

even numbers are:

10 12 14 16 18 20

odd numbers are:

11 13 15 17 19

12.

#include <stdio.h>

int main() {

int n1,n2;

printf("enter n1:");

scanf("%d", &n1);

printf("enter n2:");

scanf("%d", &n2);

for(int i = 20;i >= 10;i--){

printf("%02d ", i);

}

printf("\n");

return 0;

}

o/p:

enter n1:20

enter n2:10

20 19 18 17 16 15 14 13 12 11 10