# Home Task

**Computer systems and Programming**

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# Task 1:

#include <iostream>

using namespace std;

// A code for calculating the factorial of a given number...

int factorial(int a) {

//IF Condition: if a is 0 or 1 then return 1

if (a == 0 || a == 1) {

return 1;

}

// Else Condition: return n times the factorial of n-1

else {

return n \* factorial(n-1);

}

}

int main() {

// Declaration of Variable

int n;

//Taking Number from user

cout << "Enter a number for factorial: ";

// Takes the number from user and stores it

cin >> n;

// Check if the input is valid

if (n< 0) {

// If not, print an error message and exit the program

cout << "Invalid input. Please enter a positive integer." << endl;

}

// If the number is correct then do calculate the factorial

else {

cout << "The factorial of " << n<< " is " << factorial(n) << endl;

return 0;

}

}

# Task 2:

#include <iostream>

using namespace std;

int main()

{

// Declaration of Variables

float a, b,result;

// Taking value of A from user

cout << "Enter the value of a: ";

cin >> a;

// Taking value of B from user

cout << "Enter the value of b: ";

cin >> b;

// Calculate the result using the formula

result = (a\*a)+(b\*b)+2\*(a\*b);

// Display the result to the user

cout << "The result of polynomial is: " << result << endl;

return 0;

}

# Task 3:

#include <iostream>

using namespace std;

int main()

{

// Declaration of Variable

float cm,m,km;

// Taking value of centimetres from user

cout << "Enter the length in centimeters";

cin >> cm;

// Converting centimeters into meters by using the formula cm/100

m = cm/100;

// Display the result to the user

cout << "Length in meter: " << m << endl;

// Converting meters into kilometres by using the formula km=cm/100000

km = cm/100000;

// Display the result to the user

cout << "Length in km: " << km << endl;

return 0;

}

# Task 4:

#include <iostream>

using namespace std;

int main()

{

// Declaration of Variables

int a,b,c,d, distance;

// Taking values of A,B,C,D from user

cout << "Enter the value of A: ";

cin >> a;

cout << "Enter the value of B: ";

cin >> b;

cout << "Enter the value of C: ";

cin >> c;

cout << "Enter the value of D: ";

cin >> d;

// Calculate the distance by using the formula A^2 - B^2

distance = (b-a)\*(b-a)

+

(d-c)\*(d-c);

// Display the result to the user

cout << "The Distance between points is: " << distance << endl;

return 0;

}