Task 1:

```cpp
#include<iostream>
using namespace std;

bool isVowel(char ch){
    if(ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u'){
        return true;
    }
    else{
        return false;
    }
}

// Main:
int main(){
    char ch;
    cout<<"Enter a character: ";
    cin>>ch;
    int result;
    result = isVowel(ch);
    cout<<result;
    return 0;
}
```

Outputs:

```
Enter a character: s
0
PS C:\Users\saadg\Desktop>
```

```
Enter a character: o
1
PS C:\Users\saadg\Desktop>
```

Task 2:

```cpp
#include<iostream>
using namespace std;

string gradeCalculator(int& marks){
    if(marks >= 80 && marks <= 100){
        return "Grade A";
    }
    else if (marks >= 70 && marks <= 79){
        return "Grade B";
    }
    else if (marks >= 60 && marks <= 69){
        return "Grade C";
    }
    else if (marks >= 55 && marks <= 59){
        return "Grade D";
    }
    else if (marks >= 50 && marks <= 54){
        return "Grade E";
    }
    else{
        return "Grade F";
    }
}

// Main:
int main(){
    int marks;
    string grade;
    cout<<"Enter marks of student: ";
    cin>>marks;
    grade = gradeCalculator(marks);
    cout<<grade;
    return 0;
}
```

Outputs:

```
Enter marks of student: 83
Grade A
PS C:\Users\saadg\Desktop>
```

```
Enter marks of student: 54
Grade E
PS C:\Users\saadg\Desktop>
```

Task 3:

```cpp
#include<iostream>
using namespace std;

void swapNumbers(int& a, int& b){
    int temp = 0;
    temp = a;
    a = b;
    b = temp;
}

// Main:
int main(){
    int a, b;
    cout<<"Enter first number: ";
    cin>>a;
    cout<<"Enter second number: ";
    cin>>b;
    cout<<"-> Numbers before swapping: "<<a<<" |
"<<b<<endl;
    swapNumbers(a,b);
    cout<<"-> Numbers after swapping: "<<a<<" |
"<<b<<endl;

    return 0;
}
```

Outputs:

```
Enter first number: 1
Enter second number: 2
-> Numbers before swapping: 1 | 2
-> Numbers after swapping: 2 | 1
PS C:\Users\saadg\Desktop>
```

```
Enter first number: 4
Enter second number: 5
-> Numbers before swapping: 4 | 5
-> Numbers after swapping: 5 | 4
PS C:\Users\saadg\Desktop>
```

Task 4:

```cpp
#include<iostream>
#include<string>
using namespace std;

void decimal_to_binary(int& decimal, int& binary){
    int base = 1;
    binary = 0;
    if(decimal==0){
        binary = 0;
    }
    while(decimal>0){
        int remainder = decimal % 2;
        binary = binary + (remainder * base);
        decimal = decimal / 2;
        base = base * 10;
    }
}

// Main:
int main(){
    int decimal;
    int binary = 0;
    cout<<"Enter decimal number: ";
    cin >> decimal;
    decimal_to_binary(decimal, binary);
```

```
    cout<<"-> Binary converted Number is "<<binary;

    return 0;
}
```

Outputs:

```
Enter decimal number: 8
-> Binary converted Number is 1000
PS C:\Users\saadg\Desktop>
```

```
Enter decimal number: 4
-> Binary converted Number is 100
PS C:\Users\saadg\Desktop>
```

Task 5:

```
#include<iostream>
using namespace std;

int reverseDigit(int num){
    int reverse = 0;
    while(num>0){
        reverse = (reverse * 10) + (num % 10);
        num = num / 10;
    }
    return reverse;
}

int countDigit(int num){
    int count = 0;
    while(num%10>0){
        num = num / 10;
        count++;
    }
    return count;
}

int largestDigit(int num){
    int max = 0;
```

```
    while(num%10>0){
        int digit = num % 10;
        num = num / 10;
        if(max<digit){
            max = digit;
        }
    }
    return max;
}

// Main:
int main(){
    int num, reverse, count, maX;
    cout<<"Enter number: ";
    cin >> num;
    reverse = reverseDigit(num);
    count = countDigit(num);
    maX = largestDigit(num);
    cout<<"-> Reverse of digits is: "<<reverse<<endl;
    cout<<"-> Count of digits is: "<<count<<endl;
    cout<<"-> maX digit is: "<<maX<<endl;

    return 0;
}
```

Outputs:

```
Enter number: 123456
-> Reverse of digits is: 654321
-> Count of digits is: 6
-> maX digit is: 6
PS C:\Users\saadg\Desktop>
```

```
Enter number: 524321
-> Reverse of digits is: 123425
-> Count of digits is: 6
-> maX digit is: 5
PS C:\Users\saadg\Desktop>
```

Task 6:

```
#include<iostream>
```

```cpp
using namespace std;

float assistance(int income, int consulting_time, int&
hourly_rate){
    int over_the_time = 0;
    float service_charges = 0;
    if(income<=25000 && consulting_time<=30){
        service_charges = 0;
    }
    else if(income>25000 && consulting_time>30){
        over_the_time = consulting_time - 30;
        service_charges = 0.40 * ((hourly_rate *
over_the_time) / 60);
    }
    else if(consulting_time<=20){
        service_charges = 0;

    }
    else if(consulting_time>20){
        over_the_time = consulting_time - 20;
        service_charges = 0.70 * ((hourly_rate *
over_the_time) / 60);
    }
    return service_charges;
}

// Main:
int main(){
    int income, consulting_time, hourly_rate, charges = 0;
    cout<<"Enter Total income: ";
    cin>>income;
    cout<<"Enter consulting time (in minutes): ";
    cin>>consulting_time;
    cout<<"Enter hourly Rate: ";
    cin>>hourly_rate;
    cout<<"\n\t**Bill for Service Charges**\n";
    charges = assistance(income, consulting_time,
hourly_rate);
```

```
    cout<<"-> "<<charges;
    return 0;
}
```

Outputs:

```
Enter Total income: 25000
Enter consulting time (in minutes): 75
Enter hourly Rate: 100

        **Bill for Service Charges**
-> 63
PS C:\Users\saadg\Desktop>
```

```
Enter Total income: 650000
Enter consulting time (in minutes): 15
Enter hourly Rate: 134

        **Bill for Service Charges**
-> 0
PS C:\Users\saadg\Desktop>
```

Task 7:

```
#include<iostream>
#include<math.h>
using namespace std;

void user_Inputs(int& windSpeed, float& temperature){
    cout<<"Enter wind speed (in miles): ";
    cin>>windSpeed;
    cout<<"Enter wind temperature (in Farenheit): ";
    cin>>temperature;
}

float windChillFactor(int& V, float& T){
    float formula = 35.74 + 0.6215 * T - 35.75 * pow(V,
0.16) + 0.4275 * T * pow(V, 0.16);
    return formula;
}

// Main:
int main(){
```

```
    int V;
    float T, result;
    user_Inputs(V, T);
    result = windChillFactor(V, T);
    cout<<"-> Wind Chill Factor is: "<<result;
    return 0;
}
```

Outputs:

```
Enter wind speed (in miles): 100
Enter wind temperature (in Farenheit): 45.6
-> Wind Chill Factor is: 30.1168
PS C:\Users\saadg\Desktop>
```

```
Enter wind speed (in miles): 54
Enter wind temperature (in Farenheit): 23
-> Wind Chill Factor is: 0.969014
PS C:\Users\saadg\Desktop>
```