```cpp
/*Task # 1
Write a C++ program that uses if-else statements to check whether a given
character entered by the user is a vowel or not a vowel.
The program should take one character as input and display:
• "is a vowel" if the entered character is a, e, i, o, or u (in either uppercase
or lowercase),
• otherwise, display "is not a vowel".*/

#include<iostream>
using namespace std;
int main()
{   cout<<"SAP_ID: 72990"<<endl<<"Name: Fakhir Ashar Chaudhry"<<endl;
    char ch;
    cout << "Enter a character: ";
    cin >> ch;

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

    {  cout << "\"" << ch << "\" is a vowel." << endl; }

    else
    { cout << "\"" << ch << "\" is not a vowel." << endl; }

    return 0;
}
```

```
SAP_ID: 72990
Name: Fakhir Ashar Chaudhry
Enter a character: A
"A" is a vowel.
```

```
SAP_ID: 72990
Name: Fakhir Ashar Chaudhry
Enter a character: b
"b" is not a vowel.
```

```cpp
/*Task # 2
Write a C++ program that takes the temperature as input from the user and displays a message
according to the following conditions:
• If the temperature is greater than 35, display “It is a hot day.”
• If the temperature is between 25 and 35 (inclusive), display “It is a pleasant day.”
• If the temperature is less than 25, display “It is a cool day.” */

#include <iostream>
using namespace std;

int main()
{   cout<<"Sap_ID:72990"<<endl<<"Name: Fakhir Ashar Chaudhry"<<endl;

    float temperature;
    cout << "Enter the temperature: ";
    cin >> temperature;

    if (temperature > 35.0)
    {    cout << "It is a hot day." << endl; }

    else if ((temperature >= 25.0) && (temperature <= 35.0))
    {    cout << "It is a pleasant day." << endl;  }

    else
    {   cout << "It is a cool day." << endl;}

    return 0;}
```

```
Sap_ID:72990
Name: Fakhir Ashar Chaudhry
Enter the temperature: 20.1
It is a cool day.
```

```
Sap_ID:72990
Name: Fakhir Ashar Chaudhry
Enter the temperature: 47.2
It is a hot day.
```

```
Sap_ID:72990
Enter the temperature: 25.3
It is a pleasant day.
```

```cpp
/*Task 3
Write a program that inputs grade of a student and display his test score on the
following criteria:
Test Score  Grade
>=    90      A
80 - 89       B
70 - 79       C
60 - 69       D
Below 60      F
*/
#include <iostream>
using namespace std;
int main()
{
    cout<<"Sap_ID: 72990"<<endl<<"Name: Fakhir Ashar Chaudhry"<<endl;
    char grade;
    cout << "Enter the grade of the student: ";
    cin >> grade;

    switch(grade)
    {
        case 'A': case 'a':
            cout << "Test Score: >= 90" << endl;
            break;
        case 'B': case 'b':
            cout << "Test Score: 80 - 89" << endl;
            break;
        case 'C': case 'c':
            cout << "Test Score: 70 - 79" << endl;
            break;
        case 'D': case 'd':
            cout << "Test Score: 60 - 69" << endl;
            break;
        case 'F': case 'f':
            cout << "Test Score: Below 60" << endl;
            break;
        default:
            cout << "Invalid grade entered." << endl;
    }
}
```

```
Sap_ID: 72990
Name: Fakhir Ashar Chaudhry
Enter the grade of the student: C
Test Score: 70 - 79
```

```
Sap_ID: 72990
Name: Fakhir Ashar Chaudhry
Enter the grade of the student: a
Test Score: >= 90
```

```
Sap_ID: 72990
Name: Fakhir Ashar Chaudhry
Enter the grade of the student: h
Invalid grade entered.
```

```cpp
/* Task 4
2. Write a program that takes as input any number of seconds (as int) and then
converts it in hours, minutes and seconds. For example, if you enter 7802 the
program should print:
2 hrs 10 mins 2 secs
(Hint: Use integer division and modulus operators)*/
#include <iostream>
using namespace std;
int main()
{
    cout<<"Sap_id: 72990"<<endl<<"Name: Fakhir Ashar"<<endl;
    int sec, hrs, min,t_sec;
    cout<<"Enter total seconds:";
    cin>>t_sec;
    hrs=t_sec/3600;
    t_sec=t_sec%3600;
    min=t_sec/60;
    sec=t_sec%60;
    cout<<t_sec<<"sec = "<<hrs<<"hrs "<<min<<"min "<<sec<<"sec";
    return 0;
}
```

```
Sap_id: 72990
Name: Fakhir Ashar
Enter total seconds:2600
2600sec = 0hrs 43min 20sec
```

calculator.cpp > main()

```cpp
#include<iostream>
#include<cmath>
using namespace std;
double a,b,ans;

int main()
{
    int choice,choice_2,calc,integer,loop;
    cout<<"Sap_id: 72990"<<endl<<"Name: Fakhir Ashar Chaudhry"<<endl<<endl;
    do
    {
    cout<<"Select a choice: \n1.Scientific Calculator \n2.Simple Calculator"<<endl;
    cin>>choice;

    switch(choice)            //Calculator selection
    {
        case 1:
            calc=1;
            cout<<"Select an option from below:"<<endl<<"1.Sine \n2.Cosine \n3.Tangent  \n4.Square \n5.Cube \n6.Square Root"<<endl;
            cin>>choice_2;
            break;
        case 2:
            calc=2;
            cout<<"Select an option from below: \n1.Addition \n2.Subtraction \n3.Multiplication \n4.Division"<<endl;
            cin>>choice_2;
            break;
        default:
            cout<<"Invalid Choice"<<endl;
            break;
    }

    switch(calc)              //Taking input
    {
        case 1:
            cout<<"Enter a number:"<<endl;
            cin>>a;
            break;
        case 2:
            cout<<"Enter 2 numbers:"<<endl;
            cin>>a>>b;
```

```
            break;
        default:
            break;
    }

    if ((int(a)==a) && (int(b)==b))         //Typecasting
        {
            a=int(a);
            b=int(b);
            ans=int(ans);
        }

    if (choice==1)                          //Performing the calculation
    {
        switch(choice_2)
        {
            case 1:
                ans=sin(a);
                cout<<"The answer is:"<<ans<<endl;
                break;
            case 2:
                ans=cos(a);
                cout<<"The answer is:"<<ans<<endl;
                break;
            case 3:
                ans=tan(a);
                cout<<"The answer is:"<<ans<<endl;
                break;
            case 4:
                ans=pow(a,2);
                cout<<"The answer is:"<<ans<<endl;
                break;
            case 5:
                ans=pow(a,3);
                cout<<"The answer is:"<<ans<<endl;
                break;
            case 6:
                if (a<0)
                    cout<<"Square Root can't be calculated of negative numbers"<<endl;
                else
```

```
81                  { ans=sqrt(a);
82                      cout<<"The answer is:"<<ans<<endl;}
83                  break;
84              default:
85                      cout<<"Invalid choice"<<endl;
86                      break;
87          }
88      }
89      else if (choice==2)
90      {
91          switch(choice_2)
92          {
93              case 1:
94                  ans=a+b;
95                  cout<<a<<" + "<<b<<" = "<<ans<<endl;
96                  break;
97              case 2:
98                  ans=a-b;
99                  cout<<a<<" - "<<b<<" = "<<ans<<endl;
100                 break;
101             case 3:
102                 ans=a*b;
103                 cout<<a<<" * "<<b<<" = "<<ans<<endl;
104                 break;
105             case 4:
106                 if(b==0)
107                     cout<<"Can't be divided by Zero"<<endl;
108                 else
109                 {ans=a/b;
110                  cout<<a<<" / "<<b<<" = "<<ans<<endl;}
111                 break;
112             default:
113                 cout<<"Invalid choice";
114                 break;
115         }
116     }
117
118
119
120     cout<<"Select an option: \n1.Exit \n2.Continue"<<endl;
```

```
121         cin>>loop;
122         }
123     while(loop==2);
124 
125         cout<<"Calculator Closed!";
126         return 0;
127 
128     }
```

```
Sap_id: 72990
Name: Fakhir Ashar Chaudhry

Select a choice:
1.Scientific Calculator
2.Simple Calculator
1
Select an option from below:
1.Sine
2.Cosine
3.Tangent
4.Square
5.Cube
6.Square Root
1
Enter a number:
90
The answer is:0.893997
Select an option:
1.Exit
2.Continue
1
Calculator Closed!
```