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ASSINGMENT: Questions on C++.

SEMESTER:3rd

GitHub Repo: https://github.com/faheemiqbal370/OOPs.git

Program 1: Basic if Statement

Write a program that takes an integer input from the user and checks if it is positive, negative, or zero using if, else if, and else statements. Print the result accordingly.

```
#include<iostream>

using namespace std;

int main(){

	int a;

	cout<<"Enter a number to check hather it is Postive,Negative or Zero\n";

	cin>>a;

	if(a<0)

	{

		cout<<"The number is NEGATIVE";

	}

	else if(a>0)

	{

		cout<<"The number is POSTIVE";

	}

	else{

		cout<<"The number is ZERO";

	}

}
```

Program2: Nested if Statements

Write a program that takes a user's age as input and uses nested if statements to determine and print whether the person is a child (age < 12), teenager (age between 12 and 18), adult (age between 18 and 60), or senior (age > 60).

```
#include<iostream>

using namespace std;

int main(){

	int age;

	cout<<"Enter the age of person\n";

	cin>>age;

	if(age<12){

		cout<<"The person is Child";

	}

	else if(age>=12 && age<=18){

		cout<<"The person is Teenager";

	}

	else if(age>18 && age<=60){

		cout<<"The person is Adult";

	}

	else {

		cout<<"The person is Senior";

	}

}
```

Program3: if Statement with Multiple Conditions

Create a program that takes two integer inputs and an arithmetic operator (+, -, *, /) from the user, then performs the corresponding operation. Use if, else if, and else statements to handle each case and print the result

```
#include<iostream>

using namespace std;

int main(){

	int a,b;

	float c;

	char opr;

	cout<<"Enter two numbers\n";

	cin>>a>>b;

	cout<<"Enter the Operation you want to perform \n(+ - * /)\n";

	cin>>opr;

	if(opr=='+')

	{

		c=a+b;

		cout<<"The sum is "<<c;

	}

	else if(opr=='-')

	{

		c=a-b;

		cout<<"The difference is "<<c;

	}

	  else if(opr=='*')

	  {
```

```
        c=a*b;
        cout<<"The product is "<<c;
    }
     else if(opr=='/')
     {
        c=static_cast<float>(a) /b;
        cout<<"The division of two numbers is "<<c;
    }
    else
    {
        cout<<"INVALID INPUT";
    }
    return 0;
}
```

Program4: switch Statement for Days of the Week

Write a program that takes a number between 1 and 7 from the user and uses a switch statement to print the corresponding day of the week (1 for Monday, 2 for Tuesday, etc.). Print "Invalid input" if the number is not between 1 and 7.

```
#include<iostream>
using namespace std;
int main(){
    int a;
    cout<<"Enter:\n 1 for Monday\n 2 for Tuesday\n 3 for Wednesday\n 4 for Thursday\n 5 for Friday\n 6 for Saturday\n 7 for Sunday\n";
    cin>>a;
     switch (a)
```

```
{
case 1:
        cout<<"Monday";
          break;
case 2:
        cout<<"Tuesday";
        break;
case 3:
        cout<<"Wednesday";
        break;
case 4:
        cout<<"Thursday";
        break;
  case 5:
        cout<<"Friday";
        break;
  case 6:
        cout<<"Saturday";
        break;
  case 7:
        cout<<"Sunday";
        break;
default:
        cout<<"INVALID INPUT";
        break;
```

```
    }
    return 0;
}
```

Program5: switch Statement for Basic Calculator

Write a program that takes two integers and a character representing an operation (+, -, *, /) as input from the user and uses a switch statement to perform the appropriate arithmetic operation and print the result.

```
#include<iostream>
using namespace std;
int main(){
    int a,b,num;
    float c;
    cout<<"Enter Two numbers\n";
    cin>>a>>b;
    cout<<"Enter: \n 1 for Addition\n 2 for Subtraction \n 3 for Multiplication \n 4 for division\n";
    cin>>num;
    switch (num)
    {
    case 1:
        c=a+b;
        cout<<"The sum is "<<c;
          break;
    case 2:
        c=a-b;
        cout<<"The difference is "<<c;
```

```
            break;
        case 3:
            c=a*b;
            cout<<"The product is "<<c;
            break;
        case 4:
             c=static_cast<float>(a) /b;
            cout<<"The division of two numbers is "<<c;
            break;
        default:
            break;
        }
return 0;
}
```

Program6: Nested switch Statements for a Menu

Create a menu-based program where the user can choose between "Vegetarian" and "Non_Vegetarian" options, then display a sub-menu with specific dishes based on the selection. Use nested switch statements to handle each menu and sub-menu option.

```
#include<iostream>
using namespace std;
int main(){
    int choice;
    cout<<"Enter:\n 1 For Veg Menu\n 2 For Non-Veg menu\n";
    cin>>choice;
```

```
    switch(choice)
    {
        case 1:
        cout<<"The Veg menu contains:\n(a) Veggie Sandwich\n(b) Rajma \n(c) Vegetable Pulao\n(d) Aloo Gobi\n(e) Palak Paneer\n";
        break;
        case 2:
        cout<<"The Non-Veg menu contains:\n(a) Butter Chicken\n(b) Chicken Biryani\n(c) Rogan Josh\n(d) Fish Curry\n(e) Tabak Maaz\n";
    }
    return 0;
}
```

Program7: Grading System using if-else Statements

Write a program that takes a student's score (out of 100) as input and displays the grade based on the following criteria:

- **A: 90-100**
- **B: 80-89**
- **C: 70-79**
- **D: 60-69**
- **F: Below 60**

Use if-else statements for this.

```
#include<iostream>
using namespace std;
int main(){
    int score;
```

```
cout<<"Enter the score of the student\n";
cin>>score;

if(score>=90 && score<=100 ){
        cout<<"You got A grade";
}
else if(score>=80 && score<=89){
        cout<<"You got B grade";
}
  else if(score>=70 && score <=79){
        cout<<"You got C grade";
}
else if(score>=70 && score <=79){
        cout<<"You got D grade";
}
else if(score>=60 && score<=69){
        cout<<"You got B grade";
}
else if(score<60){
        cout<<"You have failed\n F grade";
}
else{
        cout<<"INVALID INPUT";
}
return 0;
```

}

Program8: switch Statement for Month and Days

Write a program that takes an integer from the user representing the month (1 for January, 2 for February, etc.) and uses a switch statement to print the number of days in that month. Consider leap year (assume it is a leap year if February is chosen) and handle it with an additional check.

```
#include <iostream>

using namespace std;

int main()

{


    int month,c;

    cout << "Enter:\n 1 for January\n 2 for February\n 3 for March\n 4 for April\n 5 for May\n 6 for June\n 7 for July\n 8 for August\n 9 for September\n 10 for October\n 11 for November\n 12 for December\n";

    cin>>month;

    if( month==1 || month==3 || month==5 || month==7 || month==8 || month==10 || month==12){

        c=31;

    }

    else if(month==2){

        c=29;

    }

    else{

        c=30;

    }

    switch(month){

        case 1:
```

```
cout<<"The number of days in " <<month<< " are " <<c;
break;
case 2:
cout<<"The number of days in " <<month<< " are " <<c;
break;
case 3:
cout<<"The number of days in " <<month<< " are " <<c;
break;
case 4:
cout<<"The number of days in " <<month<< " are " <<c;
break;
case 5:
cout<<"The number of days in " <<month<< " are " <<c;
break;
case 6:
cout<<"The number of days in " <<month<< " are " <<c;
break;
case 7:
cout<<"The number of days in " <<month<< " are " <<c;
break;
case 8:
cout<<"The number of days in "<<month<< " are " <<c;
break;
case 9:
cout<<"The number of days in " <<month<<" are " <<c;
```

```
            break;
            case 10:
            cout<<"The number of days in " <<month<< " are " <<c;
            break;
            case 11:
            cout<<"The number of days in " <<month<< " are " <<c;
            break;
            case 12:
            cout<<"The number of days in "     <<month<< " are " <<c;
            break;
        }
        return 0;
}
```

Program9: for Loop with if Statement for Prime Number Check

Write a program that takes an integer as input and uses a for loop with an if statement to check if the number is prime. If it's prime, print "Prime Number"; otherwise, print Not a Prime Number.

```
#include<iostream>
using namespace std;
int main(){
        int nbr,flag=1;
        cout<<"Enter the number to check wheather it is prime or not\n";
        cin>>nbr;
        if(nbr==1){
            cout<<"Number is neither Prime nor Composite";
        }
```

```
    else
    {
    for( int i=2;i<=nbr-1;i++)
    {
        if(nbr%i==0){
            cout<<"The number is composite";
            flag=0;
            break;
        }
    }
    if(flag==1){
        cout<<"The number is prime";
    }
    }
}
```

Program10: switch Statement for Character Analysis

Write a program that takes a single character as input from the user and uses a switch statement to check if the character is a vowel (a, e, i, o, u for both uppercase and lowercase) or a consonant. Print the result accordingly

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

int main() {
    char ch;
    cout << "Enter a single character\n";
    cin >> ch;
```

```
    switch (ch) {
        case 'a':
        case 'e':
        case 'i':
        case 'o':
        case 'u':
        case 'A':
        case 'E':
        case 'I':
        case 'O':
        case 'U':
            cout << "The character is a vowel." << endl;
            break;
        default:
            cout << "The character is a consonant." << endl;
            break;
    }
    return 0;
}
```