FOP LAB 3

Home Tasks

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Course Title: Computer Systems and Programming

Task 1:
Write a C++ program to print the total number of populations in Punjab, Sindh, KPK, and Balochistan using a switch case.

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

int main() {
    char provinceCode;

    cout << "Enter the province code (P, S, K, or B): ";
    cin >> provinceCode;

    switch (provinceCode) {
        case 'P':
        case 'p':
            cout << "Punjab's population: 110 million" << endl;
            break;
        case 'S':
        case 's':
            cout << "Sindh's population: 47 million" << endl;
            break;
        case 'K':
        case 'k':
            cout << "Khyber Pakhtunkhwa (KPK)'s population: 35 million" << endl;
            break;
        case 'B':
        case 'b':
            cout << "Balochistan's population: 12 million" << endl;
            break;
        default:
            cout << "Invalid province code. Please enter P, S, K, or B." << endl;
    }

    return 0;
}
```

Output:

```
Enter the province code (P, S, K, or B): B
Balochistan's population: 12 million

--------------------------------
Process exited after 4.243 seconds with return value 0
Press any key to continue . . .
```

Task 2:

Write a C++ program to check whether an alphabet is a vowel or consonant using a switch case.

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

int main() {
    char alphabet;

    cout << "Enter an alphabet: ";
    cin >> alphabet;

    switch (alphabet) {
        case 'a':
        case 'A':
        case 'e':
        case 'E':
        case 'i':
        case 'I':
        case 'o':
        case 'O':
        case 'u':
        case 'U':
            cout << alphabet << " is a vowel." << endl;
            break;
        default:
            if ((alphabet >= 'a' && alphabet <= 'z') || (alphabet >= 'A' && alphabet <= 'Z')) {
                cout << alphabet << " is a consonant." << endl;
            } else {
                cout << alphabet << " is not a valid alphabet." << endl;
            }
    }

    return 0;
}
```

Outputs:

```
Enter an alphabet: u
u is a vowel.

--------------------------------
Process exited after 133.4 seconds with return value 0
Press any key to continue . . .
```

```
Enter an alphabet: W
W is a consonant.

--------------------------------
Process exited after 5.937 seconds with return value 0
Press any key to continue . . .
```

```
Enter an alphabet: &
& is not a valid alphabet.

--------------------------------
Process exited after 6.734 seconds with return value 0
Press any key to continue . . .
```

Task 3:

Write a C++ program to check whether a number is positive, negative, or zero using a switch case.

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

int main() {
    int number;

    cout << "Enter a number: ";
    cin >> number;

    switch (number) {
        case 0:
            cout << "Zero" << endl;
            break;
        default:
            if (number > 0) {
                cout << "Positive number" << endl;
            } else if (number < 0) {
                cout << "Negative number" << endl;
            } else {
                cout << "Invalid number" << endl;
            }
            break;
    }

    return 0;
}
```

Outputs:

```
Enter a number: 23
The number is positive.

--------------------------------
Process exited after 2.853 seconds with return value 0
Press any key to continue . . .
```

```
Enter a number: -65
Negative number

--------------------------------
Process exited after 3.935 seconds with return value 0
Press any key to continue . . .
```

```
Enter a number: 0
The number is zero.

--------------------------------
Process exited after 3.234 seconds with return value 0
Press any key to continue . . .
```

```
Enter a number: j
Invalid input. Please enter a valid number.

--------------------------------
Process exited after 4.541 seconds with return value 1
Press any key to continue . . .
```

Task 4:
Write a C++ to find out whether a person is an adult, teenager, or child using nested if-else.

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

int main() {
    int age;

    cout << "Enter your age: ";
    cin >> age;

    if (age >= 0) {
        if (age < 13) {
            cout << "You are a child." << endl;
        } else if (age < 20) {
            cout << "You are a teenager." << endl;
        } else {
            cout << "You are an adult." << endl;
        }
    } else {
        cout << "Please enter a valid age." << endl;
    }

    return 0;
}
```

Outputs:

```
Enter your age: f
Invalid input. Please enter a valid age.

--------------------------------
Process exited after 2.431 seconds with return value 1
Press any key to continue . . .
```

```
Enter your age: -200
Invalid age. Age cannot be negative.

--------------------------------
Process exited after 9.794 seconds with return value 0
Press any key to continue . . .
```

```
Enter your age: 107
You are an adult.

--------------------------------
Process exited after 6.188 seconds with return value 0
Press any key to continue . . .
```

```
Enter your age: 13
You are a teenager.

--------------------------------
Process exited after 5.13 seconds with return value 0
Press any key to continue . . .
```

```
Enter your age: 12
You are a child.

--------------------------------
Process exited after 1.841 seconds with return value 0
Press any key to continue . . .
```

Task 5:

Write a C++ program that takes three number from the user and find the greatest number out of the three numbers using nested if-else statements.

```cpp
#include <iostream>
using namespace std;
int main() {
    double num1, num2, num3;
    cout << "Enter the first number: ";
    if (!(cin >> num1)) {
        cout << "Invalid input. Please enter a valid number." << endl;
        return 1;  // Exit the program with an error code
    }
    cout << "Enter the second number: ";
    if (!(cin >> num2)) {
        cout << "Invalid input. Please enter a valid number." << endl;
        return 1;  // Exit the program with an error code
    }
    cout << "Enter the third number: ";
    if (!(cin >> num3)) {
        cout << "Invalid input. Please enter a valid number." << endl;
        return 1;  // Exit the program with an error code
    }
    if (num1 >= num2) {
        if (num1 >= num3) {
            cout << "The greatest number is: " << num1 << endl;
        } else {
            cout << "The greatest number is: " << num3 << endl;
        }
    } else {
        if (num2 >= num3) {
            cout << "The greatest number is: " << num2 << endl;
        } else {
            cout << "The greatest number is: " << num3 << endl;
        }
    }
    return 0;
}
```

Outputs:

```
Enter the first number: n
Invalid input. Please enter a valid number.

--------------------------------
Process exited after 3.198 seconds with return value 1
Press any key to continue . . .
```

```
Enter the first number: 10
Enter the second number: 44
Enter the third number: -77
The greatest number is: 44

--------------------------------
Process exited after 21.52 seconds with return value 0
Press any key to continue . . .
```

Task 6:
Write a C++ program to check whether the alphabet entered by the user is Vowel or Consonant using nested if-else.

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

int main() {
    char ch;

    cout << "Enter an alphabet: ";
    cin >> ch;

    if ((ch >= 'a' && ch <= 'z') || (ch >= 'A' && ch <= 'Z')) {
        // Check if it's a lowercase vowel
        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 a consonant." << endl;
        }
    } else {
        cout << "Invalid input. Please enter a valid alphabet." << endl;
    }

    return 0;
}
```

Outputs:

```
Enter an alphabet: 7
Invalid input. Please enter a valid alphabet.

--------------------------------
Process exited after 7.775 seconds with return value 0
Press any key to continue . . .
```

```
Enter an alphabet: h
h is a consonant.

--------------------------------
Process exited after 2.842 seconds with return value 0
Press any key to continue . . .
```

```
Enter an alphabet: o
o is a vowel.

--------------------------------
Process exited after 7.757 seconds with return value 0
Press any key to continue . . .
```