

COSC 501

Lab 2

(10 points) Program 1: Selection Statement

Write a C++ program that checks whether an integer is a positive/negative/zero number, and whether it is an odd/even number.

(Hint: For odd/even numbers, use the modulus operator (%) and check the integer is divisible by 2.)

You will use this program:

```
// *****  
// COSC 501                                LAB #2  
// YOUR NAME                             DUE-DATE  
// PROGRAM-NAME: Lab2_1  
// A simple description of the program  
//*****  
  
#include <iostream>  
  
using namespace std;  
  
int main() {  
    int input;  
    cout << "Enter an integer: ";  
    cin >> input;  
  
    // if-else statement  
    .....  
  
    return 0;  
}
```

Sample Output: Red colored texts are user inputs. Other texts are the output of the program.

```
Enter an integer: -22  
-22 is Negative and Even
```

(10 points) Program 2: Iteration Statement

Write a C++ program that checks if the password is correct. The password is a 4-digit number combination. The program repeats to ask the password until the password is correct or you enter -1 to exit.

You will use this program:

```
// *****
// COSC 501                                LAB #2
// YOUR NAME                             DUE-DATE
// PROGRAM-NAME: Lab2_2
// A simple description of the program
//*****

#include <iostream>

using namespace std;

int main() {
    int const password = 1123;

    // while loop statement
        .....

    return 0;
}
```

Input: The password is set to '1123'. A user input the password to proceed, or -1 to exit.

Sample Output: The program should display the following output. (The red text is a user input.)

Test case 1: when you enter the correct password.

```
Enter the password (or -1 to exit): 1234
Password is incorrect.
Enter the password (or -1 to exit): 1123
Password is correct.
```

Test case 2: when you exit the program.

```
Enter the password (or -1 to exit): -1
You exit the program.
```

(40 points)Program 3: Selection Statement

Write a program to score the paper-rock-scissor game. Each of two users types in either **P**, **R**, or **S**. The program then announces the winner as well as the basis for determining the winner:

Paper covers rock, Rock breaks scissors, Scissors cut paper, or Nobody wins. Be sure to allow the users **to use lowercase as well as uppercase letters** and don't forget to **validate the input**.

Sample Output: Red colored texts are user inputs. Other texts are the output of the program.

Sample Output 1:

User1- please enter your selection (P, R, or S): **R**

User2- please enter your selection (P, R, or S): **S**

User1 wins! Rock Breaks Scissors.

Sample Output 2:

User1- please enter your selection (P, R, or S): **P**

User2- please enter your selection (P, R, or S): **Q**

Invalid Selection ... Good Bye!

Remember to test your program for all possible cases.

(40 points)Program 4: Selection Statement

Write an astrology program. The user types in a birthday, and the program responds with the horoscope sign for that birthday. The month may be entered as a number from 1 to 12. Then enhance your program so that if the birthday is only one or two days away from an adjacent sign, the program announces that the birthday is on a “cusp” and also outputs the horoscope for that nearest adjacent sign. This program will have a long multiway branch. Make up a horoscope for each sign.

The horoscope signs and dates are:

Aries	March 21 – April 19
Taurus	April 20 – May 20
Gemini	May 21 – June 21
Cancer	June 22 – July 22
Leo	July 23 – August 22
Virgo	August 23 – September 22
Libra	September 23 – October 22
Scorpio	October 23 – November 21
Sagittarius	November 22 – December 21
Capricorn	December 22 – January 19
Aquarius	January 20 – February 18
Pisces	February 19 – March 20

Sample Output: Red colored texts are user inputs. Other texts are the output of the program.

Sample Output 1:

Please enter your birthday (month and day, separated by a space): **7 15**
Your Horoscope Sign → Cancer

Sample Output 2:

Please enter your birthday (month and day, separated by a space): **1 35**
Invalid Birthday ... Good Bye!

Remember to test your program for all possible cases

Submission:

You should submit your source files (.cpp). Please name your files to include the lab number and program number, e.g. Lab0Program1.cpp. Also create a word or pdf document for the answers to the lab questions and the screenshot of running result of programs.