**ITCS 1212L**

**Post-Lab 6**

# Iteration structures (Loops)

1. Write a program that prompts the user to enter the number of students of a class, and ask the scores of 3 courses for each student and list the average of 3 scores for each of the students as output.

//Name: Paul Cummings

//Date: 18 October 2015

//Post Lab 6 / Program 1

#include <iostream>

using namespace std;

int main()

{

int students, x;

float scoreOne, scoreTwo, scoreThree, scoreAverage;

cout << endl << endl;

cout << "You will be asked how many students" << endl;

cout << "are enrolled in our 3 course program." << endl;

cout << "You will then have to enter the final" << endl;

cout << "grade each student received in each of" << endl;

cout << "their courses. The program will then" << endl;

cout << "calculate and display the average grade" << endl;

cout << "for each student!" << endl << endl << endl;

cout << "Please enter the number of students enrolled: ";

cin >> students;

cout << endl << "Thank You!";

for (x=0; x < students; x++)

{

cout << endl << endl << endl;

cout << "Please enter the course scores student";

cout << "number " << x+1 << " earned." << endl << endl;

cout << "Course One: ";

cin >> scoreOne;

cout << endl;

cout << "Course Two: ";

cin >> scoreTwo;

cout << endl;

cout << "Course Three: ";

cin >> scoreThree;

cout << endl;

scoreAverage = (scoreOne + scoreTwo + scoreThree) / 3;

cout << "Student number " << x+1 << " earned an average score of: " << scoreAverage;

}

cout << endl << endl;

return 0;

}

1. Write a program that finds factorial of a positive integer entered by user.

(Factorial of n = 1\*2\*3...\*n)

//Name: Paul Cummings

//Date: 18 October 2015

//Post Lab 6 / Program 2

#include <iostream>

using namespace std;

int main()

{

int number, x, factorial(1);

cout << endl << endl;

cout << "Please enter a positive integer and the" << endl;

cout << "program will find the number's factorial!" << endl << endl;

cout << "Enter your number now: ";

cin >> number;

for (x=1; x <= number; x++)

{

factorial = factorial \* x;

}

cout << endl << endl << "The factorial of your number is: " << factorial;

return 0;

}

1. Write a program that performs a survey tally on beverages. The program should prompt for the next person until a sentinel value of –1 is entered to terminate the program. Each person participating in the survey should choose their favorite beverage from the following list:

1. Coffee 2. Tea 3. Coke 4. Orange Juice

Finally it should show the number of each ordered beverages.

//Name: Paul Cummings

//Date: 18 October 2015

//Post Lab 6 / Program 3

#include <iostream>

using namespace std;

int main()

{

int user(1), coffee(0), tea(0), coke(0), oj(0), choice;

cout << "This Program will ask you and your friends" << endl;

cout << "what your favorite beverage is." << endl;

cout << "--------------------------------" << endl;

cout << "1. Coffee" << endl;

cout << "2. Tea" << endl;

cout << "3. Coke" << endl;

cout << "4. Orange Juice" << endl << endl;

cout << "Enter the choice for user " << user << endl;

cout << "Enter -1 when you are finished" << endl;

cin >> choice;

if (choice == 1)

{

coffee++;

}

if (choice == 2)

{

tea++;

}

if (choice == 3)

{

coke++;

}

if (choice == 4)

{

oj++;

}

while (choice !=-1)

{

user++;

cout << "Enter the choice for user " << user << endl;

cout << "Enter -1 when you are finished" << endl;

cin >> choice;

if (choice == 1)

{

coffee++;

}

if (choice == 2)

{

tea++;

}

if (choice == 3)

{

coke++;

}

if (choice == 4)

{

oj++;

}

}

cout << endl << endl;

if (user == 1)

cout << "No data has been entered" << endl;

else

cout << "Here is the running total for each of the favored drinks!" << endl;

cout << "---------------------------------------------------------" << endl;

cout << "Coffee: " << coffee << endl;

cout << "Tea: " << tea << endl;

cout << "Coke: " << coke << endl;

cout << "Orange Juice: " << oj << endl;

cout << "---------------------------------------------------------" << endl << endl;

return 0;

}

1. Suppose Dave drops a watermelon off a high bridge and lets it fall until it hits the water. If we neglect air resistance, then the distance *d* in meters fallen by the watermelon after *t* seconds is *d* = 0.5 \* *g* \* *t*2, where the acceleration of gravity *g* = 9.8 meters/second2. Write a program that asks the user to input the number of seconds that the watermelon falls and the height *h* of the bridge above the water. The program should then calculate the distance fallen for each second from *t* = 0 until the value of *t* input by the user. If the total distance fallen is greater than the height of the bridge, then the program should tell the user that the distance fallen is not valid.

See the sample output below:

Please iput the time of fall in seconds:

2

Please input the height of bridge in meters:

100

Time falling (seconds) Distance fallen (Meters)

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0 0

1 4.9

2 19.6

//Name: Paul Cummings

//Date: 18 October 2015

//Post Lab 6 / Program 4

#include <cmath>

#include <math.h>

#include <iostream>

using namespace std;

int main()

{

int t(0), x(0);

float height(0), truHeight(0), temp(0);

cout << endl << "Please enter the number of seconds until impact: ";

cin >> t;

cout << endl << "Please enter the height of the bridge in meters: ";

cin >> height;

cout << endl << endl;

cout << "Time Falling (Seconds)\t\tDistance Fallen (Meters)" << endl;

cout << "\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*" << endl;

for (x=0; x <= t; x++)

{

truHeight = 9.8 \* .5 \* pow(x, 2.0);

cout << "\t" << x << "\t\t\t\t" << truHeight << endl;

}

cout << "\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*" << endl;

if (height < truHeight)

{

cout << endl << endl << "The distance fallen is not valid." << endl;

}

return 0;

}

5. Write a program that prompts the user for the number of tellers at Nation’s Bank in Somwheresville that worked each of the last three years. For each worker the program should ask for the number of days out sick for each of the last three years. The output should provide the number of tellers and the total number of days missed by all the tellers over the last three years.

See the sample output below:

How many tellers worked at Nation’s Bank during each of the last three years?

2

How many days was teller 1 out sick during year 1?

5

How many days was teller 1 out sick during year 2?

8

How many days was teller 1 out sick during year 3?

2

How many days was teller 2 out sick during year 1?

1

How many days was teller 2out sick during year 2?

0

How many days was teller 2 out sick during year 3?

3

The 2 tellers were out sick for a total of 19 days during the last 3 years.

//Name: Paul Cummings

//Date: 18 October 2015

//Post Lab 6 / Program 5

#include <cmath>

#include <math.h>

#include <iostream>

using namespace std;

int main()

{

int tellers(0), x(0), y(0), days(0), totalDays(0);

cout << "How many tellers worked at Nation's Bank during" << endl;

cout << "each of the last three years? ";

cin >> tellers;

cout << endl << endl;

for (x=0; x<tellers; x++)

{

for (y=0; y<3; y++)

{

cout << "How many days was teller " << x+1 << " out sick during year " << y+1 << ": ";

cin >> days;

cout << endl;

totalDays += days;

}

}

cout << endl << endl;

cout << "The " << tellers << " teller(s) were out sick for a total of" << endl;

cout << totalDays << " days during the last 3 years." << endl << endl;

return 0;

}