Chris Adkins

Week 8
Review Questions

27.
```
cin >> num;
while (num <= 50) {
        num*=2;
        cout << num
}
```

35.
```
for (int count = 0; count < 50; count++) {
        cout << “count is” << count << endl;
}
```

36.
```
int x = 50;
while (x > 0) {
        cout << x << “ seconds to go.\n”;
        x--;
}
```

Programming Projects
Hotel Suites

```
/*    Chapter No. 5 - Exercise No. 19
      File Name:HotelSuites.cpp
      Programmer: Chris Adkins
      Date Last Modified: 10/14/2019
      CS 150 - Thursday 5:30PM

      Problem Statement:
      This program calculates the occupancy rate of 120 suites
      in the top 6 floors of a hotel.

      Overall Plan:
      1. Declare our variables for the total number of occupied suites.
      2. Declare the total number of suites in an int and a percentage as a double.
      3. Declare an int to keep track of the user's input.
      4. Use a for loop to continuously ask the user for their input.
      5. Use a do-while and an if to verify the user's input.
      6. Use the user's input to set the values of our variables.
      7. Use our variables to calculate and display the percentage to the user.

      Classes Needed and Purpose:
      iostream to interact with the user
      iomanip to clean up our output.
*/

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

int main() {
      int    totalOccupiedSuites =   0; // How many suites are occupied
      int    totalNumSuites      = 120;
      double suitePercentage     =   0;
      int    userInput;

      cout << "There are 20 suites per floor.\n";
      for (int i = 10; i < 17; i++) {
            if (i != 13) {
                  cout << "\nHow many suites on Floor Number " << i << " are occupied? ";
                  do {
                        cin >> userInput;
                        if (userInput < 0 || userInput > 20) {
                              cout << "Enter a value between 0 and 20: ";
                        }
```

```
                } while (userInput < 0 || userInput > 20);
                totalOccupiedSuites += userInput;
          }
     }

     suitePercentage = (double)totalOccupiedSuites / totalNumSuites * 100;
     cout << "\nTotal Number Of Occupied Suites: " << totalOccupiedSuites << " out of " <<
totalNumSuites << ".\n";
     cout << setprecision(2) << fixed << suitePercentage << "% of the suites are occupied.";
}
```

Sales Bar Charts

```
/*    Chapter No. 5 - Exercise No. 24
      File Name: SalesBarChart.cpp
      Programmer: Chris Adkins
      Date Last Modified: 10/16/2019
      CS 150 - Thursday 5:30PM

      Problem Statement:
      This program asks the user for sales and rounds the number
      down to the nearest 100. It then displays a bar in order
      to visualize the sales.

      Overall Plan:
      1. Initialize our three int variables to represent sales
      2. Get input from the user to set to our ints.
      3. Use nested for loops and if statements to iterate through our stores
         and print the proper amount of stars based on user input.
      4. Print output to the user.

      Classes Needed and Purpose:
      iostream for input and output
*/

#include <iostream>
using namespace std;

int main() {
      int   storeOneSales;
      int   storeTwoSales;
      int storeThreeSales;

      cout << "Enter today's sales for Store 1: ";
      cin >> storeOneSales;
      storeOneSales /= 100;
      cout << "Enter today's sales for Store 2: ";
      cin >> storeTwoSales;
      storeTwoSales /= 100;
      cout << "Enter today's sales for Store 3: ";
      cin >> storeThreeSales;
      storeThreeSales /= 100;

      cout << "\n\t  DAILY SALES";
      cout << "\n\t(each * = $100)";
      for (int i = 1; i < 4; i++) {
            cout << "\nStore " << i << ": ";
            if (i == 1) {
                  for (int i = 0; i < storeOneSales; i++) {
                        cout << "*";
                  }
            } else if (i == 2) {
                  for (int i = 0; i < storeTwoSales; i++) {
```

```
                        cout << "*";
                  }
            } else if (i == 3) {
                  for (int i = 0; i < storeThreeSales; i++) {
                        cout << "*";
                  }
            }
      }
}
```

Savings Account

```
/*    Chapter No. 5 - Exercise No. 25
      File Name: SavingsAccount.cpp
      Programmer: Chris Adkins
      Date Last Modified:
      CS 150 - Thursday 5:30PM

      Problem Statement:
      This program simulates a bank account with interest over the course
      of three months. It allows deposits and withdrawals. It will display
      a summary at the end of the three months.

      Overall Plan:
      1. Declare all of our variables that we need. We need doubles to keep track
         of all of the different amounts of money in the program. This includes
         the balance at the beginning of the program, at the end of the program
         for each of the months etc. We also need values for the withdrawals and the
         interest.
      2. Get input from the user to determine the starting balance in the account.
      3. Use for loops and do-whiles in order to simulate months passing by, the do-whiles
         are used as input validation to stop the user from inputting a negative number.
      4. Print a summary to the user containing starting and ending balances, total deposits
         as well as withdrawals, and the total interest made.

      Classes Needed and Purpose:
      iostream for input and output with the user.
      iomanip for displaying monetary values properly.
*/

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

int main() {
      double beginningBalance     = 0; // Balance at the beginning of the first month, never
changes after being set.
      double startingBalance      = 0; // Used to keep track of balance at the beginning of each
month.
      double endingBalance        = 0; // Used to keep track of the balance at the end of each
month.
      double annualInterestRate   = 0;
      double monthlyInterestRate  = 0;
      double interest             = 0; // Amount of interest made, not the rate.
      double totalDeposits        = 0; // Sum of all deposits.
      double totalWithdrawals     = 0; // Sum of all withdrawals.
      double totalInterest        = 0; // Sum of money made from interest.
      double userInput;                // Used to keep a reference of what the user typed last.

      cout << setprecision(2) << fixed;
      cout << "Enter your starting balance: $";
      cin >> startingBalance;
```

```
	beginningBalance = startingBalance;
	endingBalance = startingBalance;

	cout << "Enter your annual interest rate: ";
	cin >> annualInterestRate;
	annualInterestRate /= 100;
	monthlyInterestRate = annualInterestRate / 12;

	for (int i = 1; i < 4; i++) {
		startingBalance = endingBalance;
		do {
			cout << "How much was deposited into the account during month " << i << "? $";
			cin >> userInput;
		} while (userInput < 0);
		totalDeposits += userInput;
		endingBalance += userInput;

		do {
			cout << "How much money was withdrawn from the account during month " << i <<
"? $";
			cin >> userInput;
		} while (userInput < 0 && userInput > endingBalance);
		totalWithdrawals += userInput;
		endingBalance -= userInput;

		interest = (startingBalance + endingBalance / 2) * (monthlyInterestRate);
		totalInterest += interest;
		endingBalance += interest;
	}
	cout << "\n\tSUMMARY";
	cout << "\nStarting Balance: \t$" << beginningBalance;
	cout << "\nTotal Amount Deposited: $" << totalDeposits;
	cout << "\nTotal Amount Withdrawn: $" << totalWithdrawals;
	cout << "\nTotal Interest Made: \t$" << totalInterest;
	cout << "\n\nFinal Balance: \t$" << endingBalance;
}
```

Output

Hotel Suites

```
There are 20 suites per floor.

How many suites on Floor Number 10 are occupied? 15

How many suites on Floor Number 11 are occupied? 13

How many suites on Floor Number 12 are occupied? 16

How many suites on Floor Number 14 are occupied? 18

How many suites on Floor Number 15 are occupied? 20

How many suites on Floor Number 16 are occupied? 17

Total Number Of Occupied Suites: 99 out of 120.
82.50% of the suites are occupied.
```

Sales Bar Chart

```
Enter today's sales for Store 1: 1800
Enter today's sales for Store 2: 2000
Enter today's sales for Store 3: 950

          DAILY SALES
        (each * = $100)
Store 1: ******************
Store 2: ********************
Store 3: *********
```

Savings Account

```
Enter your starting balance: $15000
Enter your annual interest rate: 10
How much was deposited into the account during month 1? $2000
How much money was withdrawn from the account during month 1? $600
How much was deposited into the account during month 2? $1800
How much money was withdrawn from the account during month 2? $500
How much was deposited into the account during month 3? $2500
How much money was withdrawn from the account during month 3? $800

        SUMMARY
Starting Balance:       $15000.00
Total Amount Deposited: $6300.00
Total Amount Withdrawn: $1900.00
Total Interest Made:    $639.58

Final Balance:  $20039.58
```