**The Exam is due Sunday June 21st.** Type your answers for the written section. For the Lab section, use C++ compiler to write the codes. Make sure to follow the requirements specified for doing your projects: documentation, naming variables, functions with parameters, prototype declaration, etc.

**Written Section**

Write your answers on this test. Make sure your name is on all pages turned in. **TAKE YOUR TIME and READ QUESTIONS CAREFULLY!** I give partial credit, so if you don't know the complete answer to a question, write down the parts that you do know. Unless a question asks you to write a complete program, you only need to write the statements required to perform the requested task. TOTAL POINTS = 60.

(10 points) Write a **function** (calc) what will return the sum of all integers between 2 numbers which are divisible by 17. The two numbers will be passed as parameters for the function. **DO NOT** do any read or write operations in the function. Declare local variables if appropriate.

int calc(int num1, int num2)

{

int sum = 0;

for (int i = num1; i <= num2; i++)

{

if (i % 17 == 0)

{

sum += i;

}

}

return sum;

}

(10 points) Write a **function** (calc) with an integer parameter (**seconds).** The function should find and print the minutes and seconds. **DO NOT** do any read or write operations in the function. Declare local variables if appropriate.

void calc(int seconds)

{

int convertedMinutes;

int convertedSeconds;

convertedMinutes = seconds / 60;

convertedSeconds = seconds % 60;

cout << seconds << " seconds converts to " << convertedMinutes

<< " minutes and " << convertedSeconds << " seconds.\n";

}

3. (10 points) Write a loop which will read integer from the keyboard until a negative number is entered. When the loop is completed, return the count of valid numbers. Do not assume that the first number cannot be negative. If the 1st number is negative, it should print “No Data entered”.

void loopUntilNegative()

{

int sentinel = 0;

int counter = 0;

int num = 0;

while (sentinel >= 0)

{

cout << "Enter an integer number. Enter any negative "

<< "integer to exit: ";

cin >> num;

if (counter == 0 && num < 0)

{

cout << "\nNo data entered.\n";

}

else

{

sentinel = num;

}

counter += 1;

}

}

4. (10 points) Write a **function** (calc) which returns the total pay amount (a float value) when passed the number of hours worked (a float) and the hourly pay rate (a float). Assume that the employee is paid the hourly pay rate for each hour worked up to and including the first 40 hours. Hours over 40.0 (if any) are overtime and are paid at 1.5 times the hourly rate. **DO NOT** do any read or write operations in the function. Declare local variables if appropriate.

float calc(float hoursWorked, float payRate)

{

float overtimePay = 0;

if (hoursWorked <= 40)

{

return hoursWorked \* payRate;

}

else

{

overtimePay = (hoursWorked - 40) \* payRate \* 1.5;

return (40.0 \* payRate + overtimePay);

}

}

5. (10 points) Write a **function** (calc) that has two parameters - a value parameter called **num** that receives a floating-point number from the calling function, and a reference parameter used to pass back the result of this formula: 25.0\***num**+37.0. **DO NOT** do any read or write operations in the function. Declare local variables if appropriate.

void calc(float num, float &result)

{

result = 25.0 \* num + 37.0;

cout << result << endl;

}

6. (5 pts) What is the value of **result** after the following code executes:

int counter = 5;

int result = 0;

while (counter <= 14)

{

result = result + counter;

counter = counter + 5;

}

cout << result << endl;

The value of result is 15 on termination of the loop

7. (5 pts) How many times will “AllyBaba” print when the following code executes:

for (int i = 1; i <= 3; i++)

for (int j = 1; j <= 5; j++)

cout << “Ally Baba” << endl;

How many times “AllyBaba” will be displayed

Zero, but “Ally Baba” (with a space) will be displayed 15 times.

**Lab Section**

**TOTAL POINTS = 40.**

Write a program that will manage the income flow for AllyBaba Apartment complex.

AllyBaba owns an apartment complex with 10 units. He rents them with annual leases. The rent is $2,000 per month.

Conditions of payment

* If the rent is paid on or before the 3rd of the month, there will be no late fees.
* If the rent is paid after the 3rd day of the month, there will be $5.00 late charge for each day being late after the 3rd.
* Assume there are 30 days in a month. No payment will be accepted after 30th day of the month and an eviction notice will be given to the tenant. A final bill will be given to the tenant with an additional $500 eviction charge.

The manager will enter the day of the month when rent is paid for each apartment. The program will display a summary of transactions after all 10 units’ transactions are completed.

The program will display

* Units that made payment
  + How many units paid
  + Total late fees collected
  + The monies collected
* How many tenants are evicted and how much will be in collections.