Midterm Review

- Algorithm
- Ethics
- Style
- C++ code
  - Data types int, float, char
  - Variables
  - if statement
  - Logical && ||
  - while, do while

Name:_____

Email Address:_____

1. (25 points) Getting Started with C++

a) Give an example of a variable.

```
int paycheck;
```

b) Write a C++ statement to <u>prompt</u> to user to enter in their salary:

```
cout << " Enter Salary";
```

c) Create a variable in C++ that can hold a whole number, and initialize it to the value zero

```
int tax = 0;
```

d) Show how you could read in the number of hours that you work from the user: ***create the variable and a prompt! ***

```
float hours;
cout << "Enter # hours";
cin >> hours;
```

- Decrease count by 10

$$count = count - 10;$$

- Decrease count by 1

```
-- count;
count = count - 1;
```

e) Write a C++ statement that adds 1 to integer variable count:

```
++count;
count = count+1;
```

f) Now, write a C++ statement that adds 10 to integer variable count:

```
count = count+10;
```

variable   Equation

2. (25 points) If, else statements (just fill in the blanks)

*** you do NOT need to create your variables ***

a) Write ~~an~~ if/else statement to determine whether response (a character variable) is one of the following values: y or n

if (**response == 'y'**)

else if (response == 'n')

if (response =='y' || response == 'n')

b) How could you change the above if statement to test for either lower or upper case y or n values? (I want it to be true if the response variable is y, Y, n or N)   *** Show the code ***

```
if ( response == 'y' || response == 'Y' )
```

else

c) Write an if statement to determine if variable count is greater than 10 but less than 20

```
if ( count > 10 && count < 20 )
    if ( count > 10 )
        if ( count < 20 )
```

d) Write an if statement to determine if variable count is greater than 100 but not greater than 150.

```
if ( count > 100 && count <= 150 )
if ( count > 100 && ! ( count > 150 ) )
```

d) Write an if statement to find out if character variable punctuation is a period, comma, or question mark:

```
if ( punct == '.' || punct == ';' || punct == '?' )
```

3. (25 points) Loops.... while, do while, ~~for~~

In the following questions, use the while, do while, ~~and for loops~~. You may select when to use these loops...but I need to see all ~~three~~ of them used somewhere on this page!!!   **2**

*** show your **VARIABLE** definitions! ***

a) Let's say you read in the number of hours you have worked this week. What if a negative number is entered? Bad news. So, write a loop that will KEEP LOOPING as long as a negative value is entered by the user. The loop will stop once zero or a positive value is entered.

```
float ~~int~~ hours ).
    do
    {
        cout << " Enter # hours ";
        cin >> hours );
    } while ( hours < 0.0 );
```

```
cout << " Prompt ";
cin >> hours );
while ( hours < 0.0 )
    {
        cout << " Error ";
        cin >> hours )
    }
```

b) Now, write a confirmation loop. You want to re-display the number of hours that have been entered and ask the user if it is correct (y or n). If it is not correct, you want to give them another chance to enter the data.

```
10
hours

do
{
    cout << "prompt";
    cin >> hours;
    cout << " hours is: " << hours;
    cout << " is this correct? ";
                                    y/n
    cin >> response;
} while ( response == 'n' );
```

c) Write a loop that will add together all positive values from 40 through 60 (inclusive)

4. (25 points) Details!

a. What is the difference between saying 4/1 versus 4.0/3.0 ? (You do NOT need to do the math)

b. List 3 data types in C++

$$int \quad float \quad bool$$

c. True or ~~False~~ The || operator is true only when the first value is true

d. ~~True~~ or False: The && operator is true only when both values are true

e. Let's say that you have 2 variables (X and Y). They are both integers. Show how you could display them in numeric order (hint: use an if statement!)

```
if (x > y)
    cout << y <<'_'<< x;
else cout << x <<'_'<< y;
```

CS161 Midterm Exam
Introduction to Computer Science 1

Name:_____

US MAIL ADDRESS (online students):_____

_____

1. ALGORITHMS

a. Explain why an algorithm is important?
   (2 sentences maximum)

b. When creating an algorithm, list three important considerations
   or steps to think about:

   1. _____

   2. _____

   3. _____

c. Write an algorithm to phone a friend:
   DON'T SKIP ANY STEPS

2. STYLE

a. List three important aspects of program style:

1. _____

2. _____

3. _____

b. Look at the following code and rewrite it using the above "rules" you have come up with:

Put your version here:

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


int main(){float i,m;
cin>>i;
m=25.4*i; cout <<m;
return 0;   }
```

3. **ETHICS:** Computer Ethics applies to many areas of working with computers

a. Give an example of an error message that would have ethical implications:

b. Does it matter if we use an int versus a float when doing calculations regarding money? What are the ethical implications *(4 sentences maximum)*

c. List one other ethical issue not yet discussed on this page that relates to using computers and explain why this issue is important *(4 sentences maximum)*

4. **C++ Programming…** *Fill in the blanks*

a. Show an example of a "comment" in C++:

_____

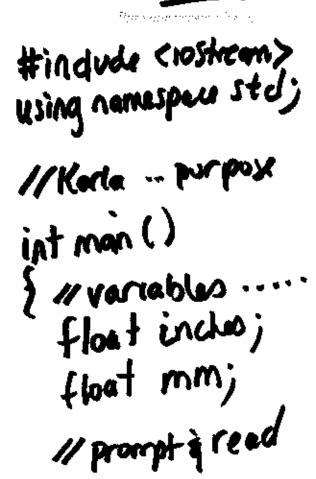b. Show an example of a variable for holding your hourly wage:

c. Show an example of reading in from the user (input):

_____

d. Show an example of writing something out to the screen (output):

_____

e. Write an if statement to determine if your hourly wage is between 5 and 10 dollars (not including 5 and 10):

   `if (` _____ `)`

f. Write an if statement to determine if a character variable "response" has a value of an upper or lower case n:

   `if (` _____ `)`

g. Write a while loop that allows the user to enter a number and add it to a running total, continuing to do this for five times:

h. Write do while that represents a "confirmation loop". Read in an whole number, and loop until the user is happy with the number that was entered:

1. _____

2. _____

3. _____

b. Look at the following code and rewrite it using the above "rules" you have come up with:

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

int main(){float i,m;
cin>>i;
m=25.4*i; cout <<m;
return 0;    }
```

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

//Karla -- purpose

int main ()
{ //variables .....
   float inches;
   float mm;
   // prompt & read
```

3. **ETHICS:** Computer Ethics applies to many areas of working with computers

a. Give an example of an error message that would have ethical implications:

```
cout <<"52";
```

b. Does it matter if we use an int versus a float when doing calculations regarding money? What are the ethical implications *(4 sentences maximum)*

c. List one other ethical issue not yet discussed on this page that relates to using computers and explain why this issue is important *(4 sentences maximum)*

4. C++ Programming... *Fill in the blanks*

a. Show an example of a "comment" in C++:

    //~~~   /*~~~*/

b. Show an example of a variable for holding your hourly wage:

_____

c. Show an example of reading in from the user (input):

_____

d. Show an example of writing something out to the screen (output):

cout << "blable" <<endl;

e. Write an if statement to determine if your hourly wage is between 5 and 10 dollars (not including 5 and 10):

if (_____)

f. Write an if statement to determine if a character variable "response" has a value of an upper or lower case n:

if (_____)

g. Write a while loop that allows the user to enter a number and add it to a running total, continuing to do this for five times:

— PRACTICE —

h. Write do while that represents a "confirmation loop". Read in an whole number, and loop until the user is happy with the number that was entered:

Running Total

- Add on to a variable
- Summing values together

$$\phi \quad 10 \quad 15 \quad 35$$

- int total = ϕ;

Midterm

Feb 8   Tues   12-1:50

ASRC 230

Feb 10   thes   5:30-7:20pm

CH 71

Feb 12   SAT   10-11:50

CH 71