Week 3

1. 99beer.cpp_____

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

int main()
{
	cout << 99 << " bottles of beer on the wall... ";
	cout << 99 << " bottles of beer on the wall... ";
	cout << endl;
	for(int beer=98; beer > 0; beer--)
	{
		cout << "Take one down! Pass it around! ";
		cout << beer << " bottles of beer on the
wall... ";
		cout << endl;
		cout << endl;

		cout << beer << " bottles of beer on the
wall... ";
		cout << beer << " bottles of beer on the
wall... ";
		cout << endl;
	}
	cout << "Take one down! Pass it around! ";
	cout << 0 << " bottles of beer on the wall... ";
	cout << endl;
	cout << endl;
return 0;
}
```

2. break.cpp_____

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

int main() // Note to self: for vs. while loop?
{
	int i=9;
	while(i >= 1) // merge all 3 parts
	{
		if(i==5)
		{
			i--;
			break;
		}
		cout << i << "..." << endl;
		i--;
	}
	cout << "BLAST OFF!\n";

	return 0;
}

## output : 9,8,7,6,..Blast Off

#include <iostream>
using namespace std;

int main() // Note to self: same for while loop?
{
	//for(int i=0; i < 10; i++)
	int i=0;
	while(i < 10)
	{
		if(i == 5)
		{
			break; // go directly to line 7, do
not pass go or collect $200
		}
		cout << i << endl;
		i++;
	}
	return 0;
}

## output : 0,1,2,3,4
```

3. BridgeofDeath_____

```
int main()
{
	string ans1, ans2, ans3;

	cout << "STOP!\n";
	cout << "Yee who would cross the bridge of death\n";
	cout << "Must answer me, these questions three\n";
	cout << "Ere the other side yee see....\n";

	cout << "What... is your name?  ";
	getline(cin, ans1);

	if(ans1 == "James")
	{
		cout << "What... is your quest?  ";
		getline(cin, ans2);

		if(ans2.compare("to teach") == 0)
		{
			cout << "What... is the capitol of
Assyria?  ";
			getline(cin, ans3);

			if(ans3 == "Assur")
			{
				cout << "Alright... off you
go!\n";
				exit(0); // STOP RIGHT NOW
			}
		}
	}

	cout << "AAAAAaaaaaa......\n";
	return 0;
}
```

4. Continue.cpp_____

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

int main() // Note to self: for vs. while loop?
{
	int i=9;
	while(i >= 1) // merge all 3 parts
	{
		if(i==5)
		{
			i--;
			continue;
		}
		cout << i << "..." << endl;
		i--;
	}
	cout << "BLAST OFF!\n";

	return 0;
}

## output: 9,8,7,6,4,3,2,1,Blast!

#include <iostream>
using namespace std;

int main() // Note to self: same for while loop?
{
```

```
        //for(int i=0; i < 10; i++)
        int i=0;
        while(i < 10)
        {
                if(i == 5)
                {
                        continue; // go directly to line 7, do
not pass go or collect $200
                }
                cout << i << endl;
                i++;
        }
        return 0;
}

## output: 0,1,2,3,4, (Continue…..stuck)
```

5. DoWhile.cpp_____

```
#include <iostream>

using namespace std;

int main() //note: cin blast-off start
{
        int countDown; // part 1: value setting

        cin >> countDown;

        do // part 2: value checking
        {

                cout << countDown << "..." << endl;
                countDown--; // part 3: value changing
        } while(countDown >= 1);
        cout << "BLAST OFF!" << endl;

        return 0;
}
```

6. Forloop.cpp_____

```
#include <iostream>

using namespace std;

int main()
{
        for(int i=3; i >0; i--) // condensed
        {
                cout << i << "...\n";
        }
        cout << "Blastoff!!\n";

        return 0;
}
```

7. Max.cpp_____

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

int main()
{
        cout << "Enter two numbers:\n";
        int x,y;
        cin >> x >> y;

        if(x > y)
        {
                cout << "First is larger\n";
        }
        else
        {
                cout << "Second is larger\n";
        }

//      x > y ? ___ : ^^^^^
//   if     true   false


        cout << (x > y ? "First" : "Second") << " is larger\n";


        return 0;
}
```

8. RandomnumberGuess.cpp_____

```
#include <iostream>
#include <ctime>
#include <cstdlib> // "standard" library

using namespace std;

int main() // NOTE: need cstdlib
{
        srand(time(NULL)); // or srand(time(0));
        int guess;
        cout << "What number am i thinking of: (0-9)\n";
        cin >> guess;

        int randomNumber;
        randomNumber = rand()%10;// mod 10 will be between 0 to
9



        if(guess == randomNumber)
        {
                cout << "You got it! have a cookie!\n";
        }
        else
        {
                cout << "you noob the number was: " <<
randomNumber;
        }

        bool happy = true;

        if(!happy)
        {
                cout << "You are sad\n";
        }
        else
        {
                cout << "You are happy!\n";
        }

}
```

9. Scope.cpp_____

```
#include <iostream>
#include <cstdlib>

using namespace std;

int main()
{
        int x;
        int y = 5;
        x = 2;

        if(true)
        {
                int y;
```

```
                y = 3;
                cout << "x is: " << x << endl;
                cout << "y is: " << y << endl;
        } // RIP y

        cout << "x is: " << x << endl;
        cout << "y is: " << y << endl;

        return 0;
}

##output
x: 2
y: 3
x: 2
y: 5


#include <iostream>
#include <cstdlib>

using namespace std;

int main()
{
        int number;
        cout << "Enter a positive number: ";
        cin >> number;
        if(number > 0)
        {
                cout << "Enter another number: ";
                int number2;
                cin >> number2;
        }

        cout << "Their sum is " << number + number2 << endl;

        return 0;
}

##Output
: Nothing
```

10. ShortCircuit.cpp_____

```
#include <iostream>

using namespace std;

int main()
{
        cout << "Enter two numbers:\n";
        int x,y;
        cin >> x >> y;
        if(y==0)
        {
                cout << "you are a terrible person!\n";
        }
        else
        {

//      if(y != 0 && x/y >= 1)
                if(x/y >= 1)
                {
                        cout << "x is larger";
                }
                else
                {
                        cout << "y is bigger";
                }
        }
        return 0;
}
```

11. ShortCircuit (And Or).cpp_____

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

int main()
{
        //int x = 7/0;
        if(false && 7/0 == 2) {
                cout << "Will I crash?\n";
        }

        if (2 == 2 || 7/0 == 0) {
                cout << "No crash\n";
        }


        cout << "Ending program...\n";
        return 0;
}

##Output:
No crash
Ending program…
```

12. SumLoop.cpp_____

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

int main() // Note to self: prompt (also buffer?) vs escape value
{
        int total=0;
        int howManyTimes;
        cout << "How many numbers do you wish to add together?
";
        cin >> howManyTimes;

        for(int i =0; i < howManyTimes; i++)
        {

                int toAdd;
                cout << "Give me a number: ";

                cin >> toAdd;
                total = total + toAdd; // total += toAdd;
        }

        cout << "The sum was: " << total << endl;

        return 0;
}
```

13. Switch.cpp_____

```
#include <iostream>
#include <cstdlib>

using namespace std;

int main() // NOTE: switch on sleep
{
        int hours;
        cout << "How much sleep did you get last night?\n";

        cin >> hours;

        switch(hours) // only test ==
        {
                case 0:
                case 1:
```

```
                case 2:
                        cout << "Dang! You must be tired!\n";
                case 3:
                case 4:
                case 5:
                        cout << "At least you got some...\n";
                        break;
                case 7: // hours == 7
                case 6: // hours == 6
                        cout << "Decent\n";
                        break;
                default:
                        cout << "That's enough sleep!\n";
                        break;
        }
}
```

Week 2

1. assignmentOp.cpp_____

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

int main()
{
        int x, y, z;

        x = 7;
        y = 4;
        z = 22;

        x = 4;

        x *= 2; // double the value of x

        cout << x << y << z << endl;
        cout << "x is: " << x << endl;
        cout << endl;


        int a;
        a = 1;


        cout << "a is: " << a << endl;
        cout << "a is: " << (++a)++ << endl;
        cout << "a is: " << a << endl;


        x = 2 + (y = 7);
        cout << "x is: " << x << endl;
        cout << "y is: " << y << endl;

}
```

```
##Output
x: 8
a: 1
a: 2
a: 3
x: 9
y: 7
```

2. SimpleDivision.cpp_____

```
#include <iostream>
using namespace std;
// NOTE: typecasting

int main()
{
        int x = 3.5; // manual conversion of 3.5 to int
        cout << "Wrong way: " << 1/2*x << endl;
        cout << "Right way: " << 1.0/2*x << endl;
        cout << "Another way: " << static_cast<double>(1)/2*x <<
endl;
        cout << "Another(er) way: " << ((double) 1)/2*x << endl;




//      cout << 3 * 1.1 << endl;
        // int * double == double (more expressive)
}
```

3. Stringinput.cpp_____

```
#include <iostream>
#include <cmath>

using namespace std;
//NOTE: getline vs cin for strings
int main()
{
        /*
        char mi = 'E';
        string words = "this is my sentence";

        cout << "words is: " << words << endl;
        */
        cout << stod("36.7")*2 << endl;


        string x;
        getline(cin, x); // waiting on this line
        // this will get everything until you hit ENTER
        cout << "You just typed: " << x << endl;

        string y;
        cin >> y;// waiting for me to type something
        // y will be a SINGLE word
        cout << "You just typed: " << y << endl;


        // ENTER symbol issues:
        string a;
        cin >> a;
        cout << "single word: " << a << endl;

//      string dummy;
//      getline(cin,dummy); // eat the enter symbol

        string b;
        getline(cin, b);
        cout << "multiple words: '" << b <<"'" <<endl;

                // String formatting below
        cout << "pi is: " << M_PI << endl;
        cout.precision(10);
        cout << "pi is: " << M_PI << endl;
        cout.precision(1000);
        cout << "pi is: " << M_PI << endl;

        cout << 1.0/3 << endl;
        cout.precision(6);
        cout << 1.0/3 << endl;

}
```

4. SubtractError.cpp_____

```
#include <iostream>
```

```
using namespace std;
// 0.1 0.2 and 0.3... what could go wrong?
int main()
{
	double x = 0.3;
	double y;
	y = 0.1 + 0.2;

	cout << x-y << endl;

	double a = 3.75;
	double b;
	b = 3.5 + 0.25;

	cout << a-b << endl;
}


##Output
-2132214.e1224 (almost 0)
0

#include <iostream>
using namespace std;
// 0.1 0.2 and 0.3... what could go wrong?
int main()
{
	double x =   1000000000000000000.0;
	double xp1 = 1000000000000000001.0;

	cout << xp1 - x << endl;

	return 0;
}

##Output
0
```

Midterm Practice 1

```
#include <iostream>
#include <string>
using namespace std;
//1.//
int main()
{
	int x, d;
	int temp;

	cout << "Enter a x value: ";
	cin >> x;

	d = x;

	for (int i=1; i<=x-1; i++)
	{
		temp = x - i;
		d = d * temp;
	}
	cout << "x factorial is: " << d << endl;
}

//2.//
(a): ... -4,-3,-2,-1,0,1,2
(b): ...-2,0,2,3,4,5,6,...
(c): 0,1,2,4,5,7,...
(d): 0 (it will be false no matter what)
(e): ...-5,-4,-3,-2,-1,0

//3.//
(a):
for (int n=1; n<=10; n++)
{
	cout << n << " ";
}

(b):
for (int n=10; n>=5; n--)
{
	cout << n << " ";
}

(c):
for (int n=5; n>=-2; n--)
{
	cout << 2*n << " ";
}

(d):
for (int n=0; n<=9; n++)
{
	cout << pow(2,n) << " ";
}
```

```
(e):
for (int n=1; n<=19; n++)
{
         if (n%5 != 0)
         {
                  cout << n << " ";
         }
}


//4.//
int main()
{
         int page;
         int week;
         int total;

         cout << "Enter page and week: ";
         cin >> page >> week;

         total = 0;

         for (int i=1; i<=week; i++)
         {
                  page = 100 + (10*(i-1));
                  total = total + page;
         }

         cout << total;
}

//5.//
output:
######
#
#
######
#
#
######
int main()
{
            for(int i=0; i < 7; i++) {
        if(i%3 == 0) {
            for(int i=0; i < 7; i++) {
                cout << "#";
}
            cout << endl;
        }
        else {
            cout << "#\n";
} }
}

//_____6_____//
int main()
{
         string num;
         string firstnum, secondnum, thirdnum, fourthnum, decval;
         int com1, com2, com3, dec;
         double total;

         cout << "Enter a number: ";
         getline(cin,num);

         // find decimal value
         dec = num.find(".");
         decval = num.substr(dec+1);

         // find first comma, and so on.
         com1 = num.find(",");
         if (com1 != -1)
         {
                  firstnum = num.substr(0,com1-1);

                  com2 = num.find(",",com1+1);
                  if (com2 != -1)
                  {
                           secondnum = num.substr(com1+1,com2-1);

                           com3 = num.find(",",com2+1);
                           if (com3 != -1)
                           {
                                    thirdnum =
num.substr(com2+1,com3-1);
                                    fourthnum =
num.substr(com3+1,3);

                                    total =
stod(firstnum)*1000000000 + stod(secondnum)*1000000 +
stod(thirdnum)*1000 + stod(fourthnum) + 0.1*stod(decval);

                           }
                           else
                           {
                                    thirdnum =
num.substr(com2+1,3);
                                    total =
stod(firstnum)*1000000 + stod(secondnum)*1000 + stod(thirdnum) +
0.1*stod(decval);
                           }
                  }
                  else
                  {
                           secondnum = num.substr(com1+1,3);
                           total = stod(firstnum)*1000 +
stod(secondnum) + 0.1*stod(decval);
                  }
         }
         else
         {
                  total = stod(firstnum) + 0.1*stod(decval);
         }
}



//7.//
int main(){
    char c;
    int v=0, k=0;

    cin >> c;

    while(c != '.')
    {
        cin >> c;  // syntax error

        if(c == 'a' || c == 'e' || c == 'i' || c == 'o' || c ==
'u')  // syntax error
        {
                  v++;
        }
        if(c == 'k')     // syntax or logic error : logic error
        {
            k++;
        }
    }
    cout << "In this sentence, there are: " << endl;
    cout << v << " lower case vowels" << endl;
    cout << k << " letter k's" << endl;
}
```

```
//8.//
int main()
{
	string name, firstname, middlename, lastname;
	int num1, num2;

	cout << "Enter your full name: ";
	getline(cin, name);

	num1 = name.find(" ");
	if( num1 != -1)
	{
		firstname = name.substr(0,num1);
	}

	num2 = name.find(" ",num1+1);
	if ( num2 != -1)
	{
		middlename = name.substr( num1+1, num2-num1);
		lastname = name.substr(num2+1);
		cout << lastname << ", " << firstname << " " <<
middlename << endl;
	}
	else
	{
		lastname = name.substr(num1+1);
		cout << lastname << ", " << firstname << endl;
	}

	return 0;
}
```

Midterm Practice 2

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

//1.//
int main()
{
	int x, n, d;
	int result;

	cin >> x >> n;

	result = 1;

	for (int i=1; i<=n; i++)
	{
		result = result * x;
	}

	if (result > 987/543)
	{
		d = result;
	}
	else
	{
		d = 987/543;
	}

	cout << d;
}

//2.//
(a): ...-3.-2,-1,1,2,3,...
(b): 3,4,6,7,8,9
(c): All number
(d): 1 (Basically anyhing is true)
(e): 6,12,18,24,30,...

//3.//
output:
3 9 4 5 5

//4.//
int main()
{
	double start, before;
	int randnum;

	cout << "Start length: ";
	cin >> start;

	before = start + 0.3;

	if (before > 2.0)
	{
		cout << 0.5 << endl;
	}
	else
	{
		srand(time(NULL));
		randnum = rand()%2;

		if (randnum==0)
		{
			cout << before - 0.1 << endl;
		}
		else
		{
			cout << before << endl;
		}
	}
}

//5.//
int main()
{
	int n, a, b;

	cout << "Enter a valule: ";
	cin >> n;

	for (a=1; a<=n; a++)
	{

		for (b=1; b<=n; b++)
		{
			if (a==1 || a==n)
			{
				cout << "X";
			}
			else
			{
				if ( b == 1 || b == n)
				{
					cout << "X";
				}
				else
				{
					cout << " ";
				}

			}
		}
		cout << endl;
	}
```

```
}

//6.//
int main()
{
         int num=1 , min=999999999;

         while ( num != 0 && num != 0 )
         {
                  cin >> num;
                  if (num < min)
                  {
                           min = num;
                  }
         }
         cout << min << endl;
         return 0;

         or

         int num , min=999999999;

         cin >> num;

         while ( num != 0 )
         {
                  cin >> num;
                  if (num < min)
                  {
                           min = num;
                  }
                  cin >> num;
         }
         cout << min << endl;
         return 0;
}
```

```
//~ //7.//
int main()
{
    double sum = 0;
    int i = 1;
    double dist = 7; // initialize front
    sum = dist;
    while(i <= 10) {     // logic error : not if   logic error2 :
not = it's only 9 of them
        cout << "Next distance? ";
        cin >> dist;
        sum += dist;    // syntaz error:  +=
        i++;                          // logic error: i++; increase
    }
    cout << "Average distance = " << sum/10;
}


//8.//
int main()
{
         int f1, i1, f2, i2, total1, total2;
         char a, b;

         cout << "Enter two height";
         cin >> f1 >> a >> i1 >> b >> f2 >> a >> i2 >> b;

         total1 = (f1*12) + i1;
         total2 = (f2*12) + i2;

         if (total1>total2)
         {
                  cout << "First person is largest" << endl;
         }
         else
         {
                  cout << "Second person is largest" << endl;
         }
}
```