SOFTWARE DEVELOPMENT

CNIT 155
LOOPS IN C#

CHAPTER - [illegible]

PURDUE

Today's Goals:

Announcements

- Lab07
  - Due: Mon. 11:50 PM
- Online quiz
  - Due Sunday
- **Midterm Exam:**
  - Wed. 3/09/16
  - 6:30 – 7:30 PM
  - LILY 1105
- No lecture next Friday ☺

Repetition Structure = Loops

- **There are 3 main coding structures:**
- **Sequential**
- **Selection**
- **Repetition**

Repetition

Repetition Structure = Loops

- **In Nature…**

- **In a factory …**

- **Other examples?**

Terminology

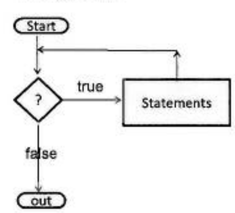
- **One iteration [cycle]**
- **Loop condition**
- **Loop variable(s)**
- **Loop body**

While loop -

Syntax:

```
while( condition)
{
    statements
}
```

Diagram:



Ex1: Display "Hail Purdue" 5 times.

```
int count;        // loop variable
count = 1;
while (-------------------)
{
    txtOut.Text = txtOut.Text + "Hail Purdue \r\n";
    count++;
}
```

Trace the loop

```
count = 1;
while (count <= 5)
{
    txtOut.Text = txtOut.Text + "Hail Purdue \r\n";
    count = count + 1;
}
```

count	condition	Output
1	true	Hail Purdue
2	true	Hail Purdue
3	true	Hail Purdue
4	true	Hail Purdue
5	true	Hail Purdue
6	false	------------------ loop ends

Ex2: Display numbers 1 to 10 :

```
int count = 1;
while ( count <= 10 )
{
    txtOutput.Text = txtOutput.Text +
                          count.ToString() +
 "\r\n";
    count++;
 }
```

See computer demo ☺

Ex3: Add up numbers 1 to 10

Q: How many variables do you need?

A: 2

```
int num = 1;
int sum = 0;

while (------------------)
{
     // add num to sum
     // increment num
}
txtoutput.text = "Sum = " + sum.Tostring();
```

Trace the loop: (add 1 + 2 + ...)

Cycle	count	count <= 10	sum
1	1	true	1
2	2	true	3
3	3	true	6
4	4	true	10

iClicker-1: What is the output?

```
int n = 1;
while (n <= 6)
{
    txtOutput.Text = txtOutput.Text + n.ToString()
                                              + "\r\n";
    n++;
 }
```

```
A. 1, 2, 3, 4, 5, 6
B. 1, 2, 3, 4, 5, 6, 7
C. 1, 2, 3, 4, 5
```

Infinite loop

Ex: the following loop will never end!

```
int n = 1;
int sum = 0;
while (n <= 100)
{
    sum = sum + n;
}
```


Loop that does not execute!

Ex: Add up the even numbers: 0 + 2 + 4 + ...

```
int n = 0;
int sum = 0;
while (n >= 100)
{
    sum = sum + n;
    n = n + 2;
}
```


iClicker-2: What is the output?

```
int n = 1;
while (n <= 6)
{
    n++;
}
txtOutput.Text = n.ToString();
```

A. 1, 2, 3, 4, 5, 6
B. 6
C. 7