

APRIL 13TH

- *Project-*
  - *Part 1 released with lab week of Mar 27th*
  - *Part 2 released with lab week of Apr 3<sup>rd</sup>*
  - *Part 3 released with lab week of Apr 10<sup>th</sup>*
  - *Part 4 will be released tomorrow Apr 14th*
  - *Be sure to keep up with project. Complete one webpage at a time and turn it in. This way you will not be overwhelmed at the end.*
  - *deadline for entire project is last day lab.*
  - *April 23<sup>rd</sup> or 24<sup>th</sup>. 15% of class grade*
- *Homework 8*
  - *Solutions on blackboard and video*
- *Homework 9 and Quiz 5*
  - *to be assigned*
- *Homework 10*
  - *next week*

# FOR LOOPS

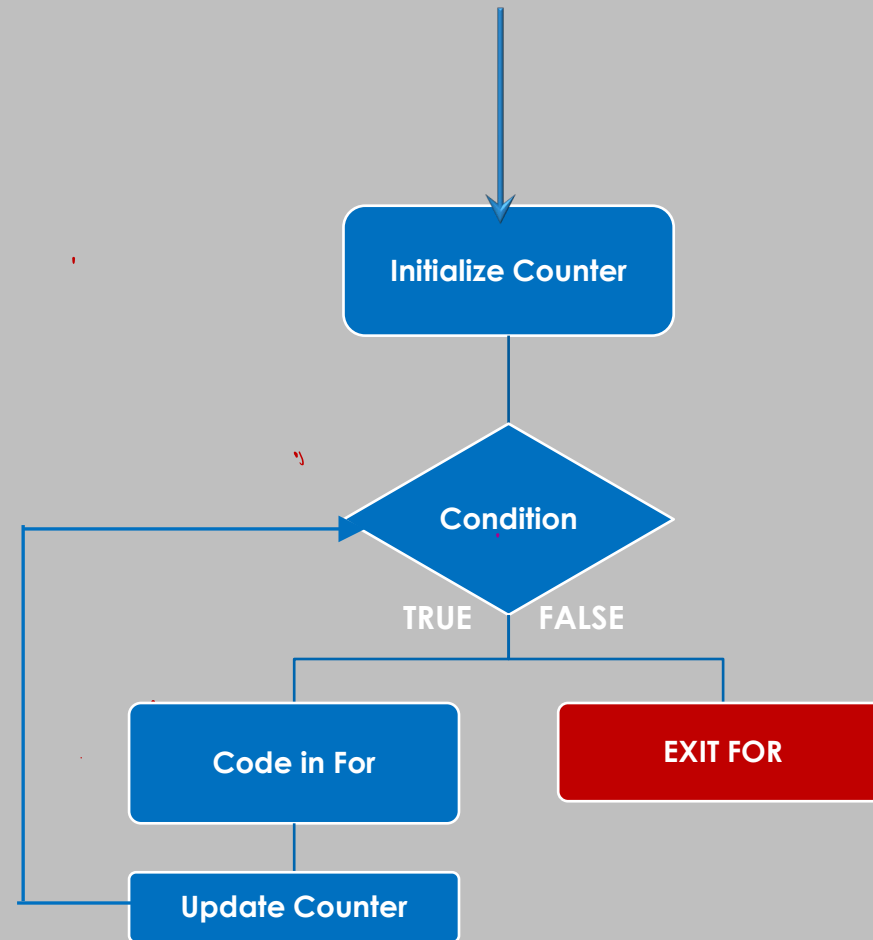
```
for (statement 1; statement 2; statement 3)  
{  
  code block to be executed  
}
```

*statement 1* initializes the loop  
*START*

*statement 2* conditional statement  
*If True* {execute code in for block}  
*Else* {exit for statement }  
*STOP*

*statement 3* how to increment or decrement loop  
*Executes each time after the block code*

# FOR LOOPS



# EMBED VIDEOS

```
<iframe width="420" height="315"  
src="your video">  
</iframe>
```

# WHILE LOOPS

```
while (condition) {  
  code block to be executed  
}
```

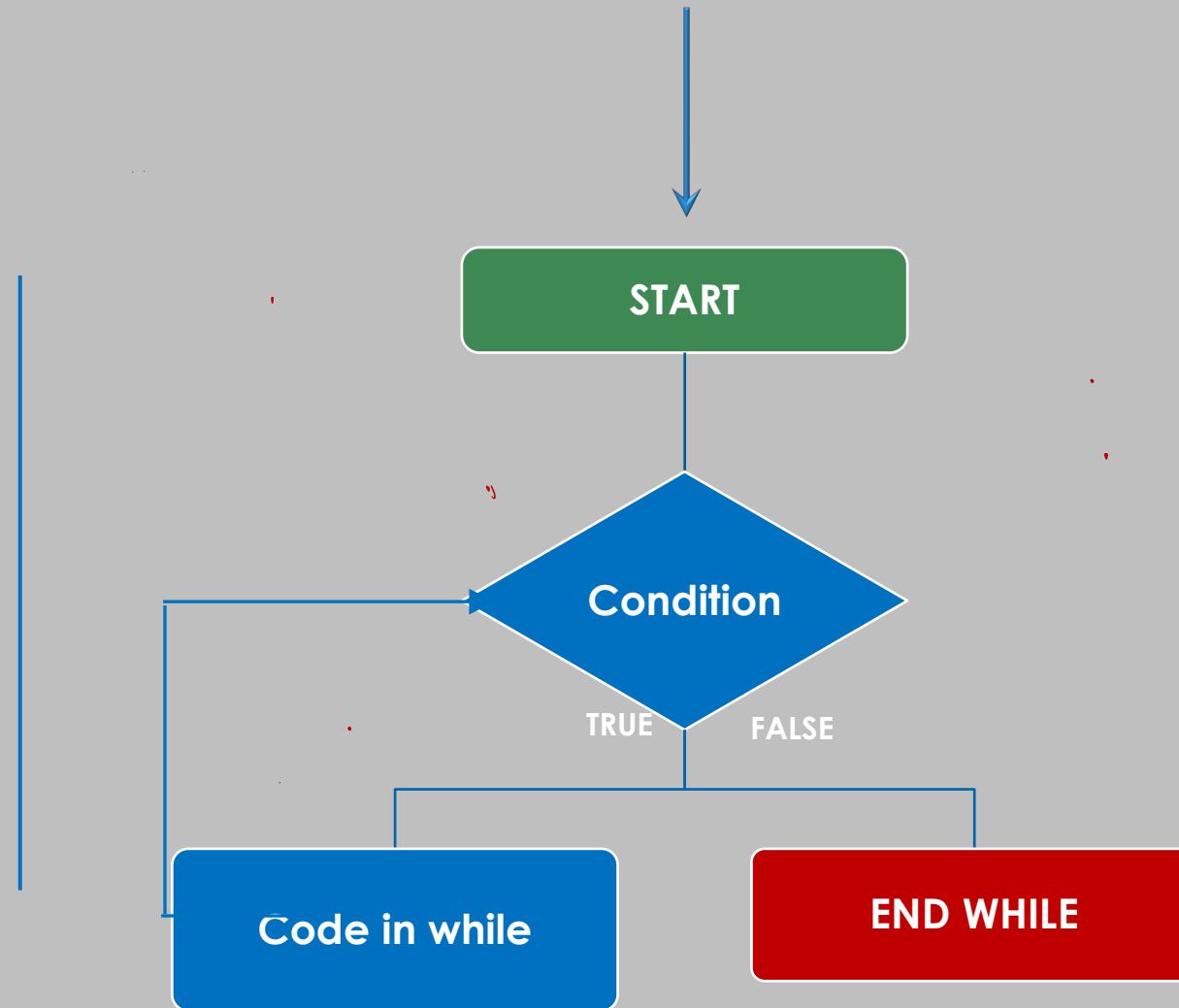
*START defined outside of statement*

*conditional statement*  
*If True {execute code in for block}*  
*Else {exit for statement }*  
*STOP*

*How to increment or decrement loop*  
*Inside block code*



# WHILE LOOP



# SIMULATION TABLE LOOPS

1. What are the variables?
2. Get initial values
3. How to loop? Step? Increment/Decrement
4. Condition
5. Expression or Block of code to execute
  
6. Create Simulation Table
  - a. Initial value of counter
  - b. Initial value of expression
  - c. Counter next value

# EXAMPLES FOR VS WHILE LOOPS: Initialize Tables

A

```
var sum = 0
for (i = 0; i < 5; i++) {
    sum = sum + i;
}
```

i	sum=sum+i	i=i+1
0	0+0=0	0+1=1

After exiting the loop, i has the value of 5.  
The final sum is 10.

B

```
var i = 0;
while (i < 5) {
    sum = sum + i;
    i++;
}
```

i	sum=sum+i	i=i+1
0	0+0=0	0+1=1

After exiting the loop, i has the value of 5.  
The final sum is 10.



# EXAMPLES FOR VS WHILE LOOPS: Next Step

```
A  
var sum = 0  
for (i = 0; i < 5; i++) {  
    sum = sum + i;  
}
```

i	sum=sum+i	i=i+1
0	0+0=0	0+1=1
1	0+1=1	1+1=2

After exiting the loop, i has the value of 5.  
The final sum is 10.

```
B  
var i = 0;  
while (i < 5) {  
    sum = sum + i;  
    i++;  
}
```

i	sum=sum+i	i=i+1
0	0+0=0	0+1=1
1	0+1=1	1+1=2

After exiting the loop, i has the value of 5.  
The final sum is 10.

# EXAMPLES FOR VS WHILE LOOPS: Next Step

A

```
var sum = 0
for (i = 0; i < 5; i++) {
    sum = sum + i;
}
```

i	sum=sum+i	i=i+1
0	0+0=0	0+1=1
1	0+1=1	1+1=2
2	1+2=3	2+1=3

After exiting the loop, i has the value of 5.  
The final sum is 10.

B

```
var i = 0;
while (i < 5) {
    sum = sum + i;
    i++;
}
```

i	sum=sum+i	i=i+1
0	0+0=0	0+1=1
1	0+1=1	1+1=2
2	1+2=3	2+1=3

After exiting the loop, i has the value of 5.  
The final sum is 10.

## EXAMPLES FOR VS WHILE LOOPS: outcome is identical

**A**

```
var sum = 0
for (i = 0; i < 5; i++) {
    sum = sum + i;
}
```

i	sum=sum+i	i=i+1
0	0+0=0	0+1=1
1	0+1=1	1+1=2
2	1+2=3	2+1=3
3	3+3=6	3+1=4
4	6+4=10	4+1=5
5	exit	exit

After exiting the loop, i has the value of 5.  
The final sum is 10.

**B**

```
var i = 0;
while (i < 5) {
    sum = sum + i;
    i++;
}
```

i	sum=sum+i	i=i+1
0	0+0=0	0+1=1
1	0+1=1	1+1=2
2	1+2=3	2+1=3
3	3+3=6	3+1=4
4	6+4=10	4+1=5
5	exit	exit

After exiting the loop, i has the value of 5.  
The final sum is 10.

# EXAMPLES FOR VS WHILE LOOPS: outcomes are different

A

```
var sum = 0
for (i = 0; i < 5; i++) {
    sum = sum + i;
}
```

i	sum=sum+i	i=i+1
0	0+0=0	0+1=1
1	0+1=1	1+1=2
2	1+2=3	2+1=3
3	3+3=6	3+1=4
4	6+4=10	4+1=5
5	exit	exit

After exiting the loop, i has the value of 5.  
The final sum is 10.

B

```
var i = 0;
while (i < 5) {
    i++;
    sum = sum + i;
}
```

i	i=i+1	sum=sum+i
0	0+1=1	0+1=1
1	1+1=2	2+1=3
2	1+2=3	3+3=6
3	1+3=4	6+4=10
4	1+4=5	10+5=15
5	exit	exit

After exiting the loop, i has the value of 5.  
The final sum is 15.

WHY?

# ARRAYS

VARIABLES WITH MULTIPLE VALUES

- List of items:
- content numbers, text, filenames etc.
- Grocery List:
- Eggs, bacon, juice, milk
- EXAMPLES:
- `var grocery_list=["eggs", "bacon", "juice", "milk", "fruit"]`
- `var students =["john", "mary", "scott", "jane"]`



# ARRAYS

## VARIABLES WITH MULTIPLE VALUES

- Data Structure-ARRAY
- Efficient way to execute the same block of code over multiple content with loops
- To access each item in an array, we use numbers referring to their position, JavaScript starts numbering at 0. R and Matlab start at 1.
- `grocery_list[2]` is the third item in `grocery_list`

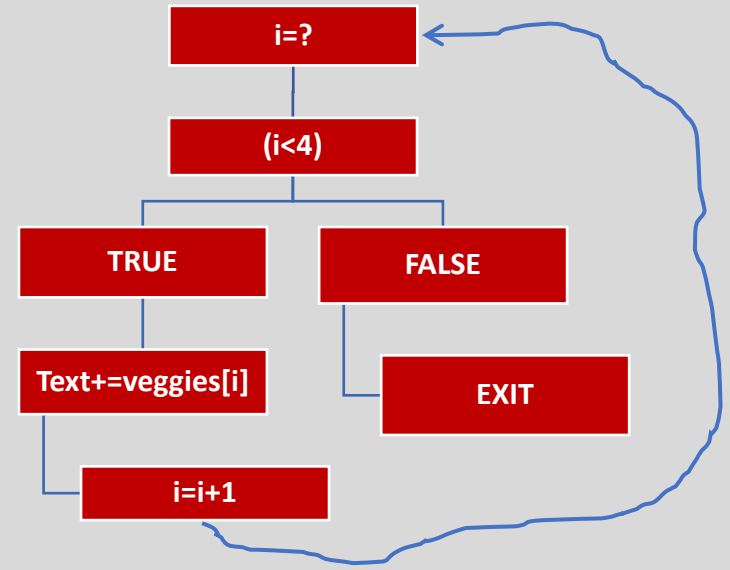
eggs	bacon	juice	milk	fruit
0	1	2	3	4



# EXAMPLES FOR LOOP WITH AN ARRAY

```
var veggies =
["Onions", "Peppers", "Peas", "Corn"];
var text="";

for (i = 0; i < 4; i=i+1) {
  text += veggies[i];
}
```



i	Veggies[i]	text+=veggies[i]	i=i+1
0	Onions	Onions	0+1=1
1	Peppers	OnionsPeppers	1+1=2
2	Peas	OnionsPeppersPeas	2+1=3
3	Corn	OnionsPeppersPeasCorn	3+1=4
4	exit	exit	exit

The value of i when exiting from the loop is 4.