

For

Last updated 9/10/21

For

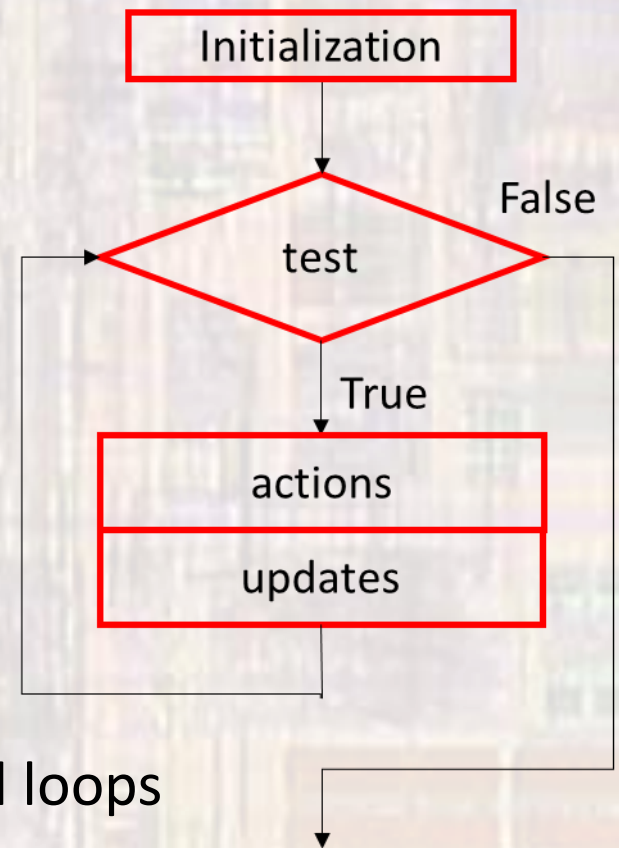
- For loop

for(exp1; exp2; exp3)
statement;

exp1 -> initialization

exp2 -> test

exp3 -> update

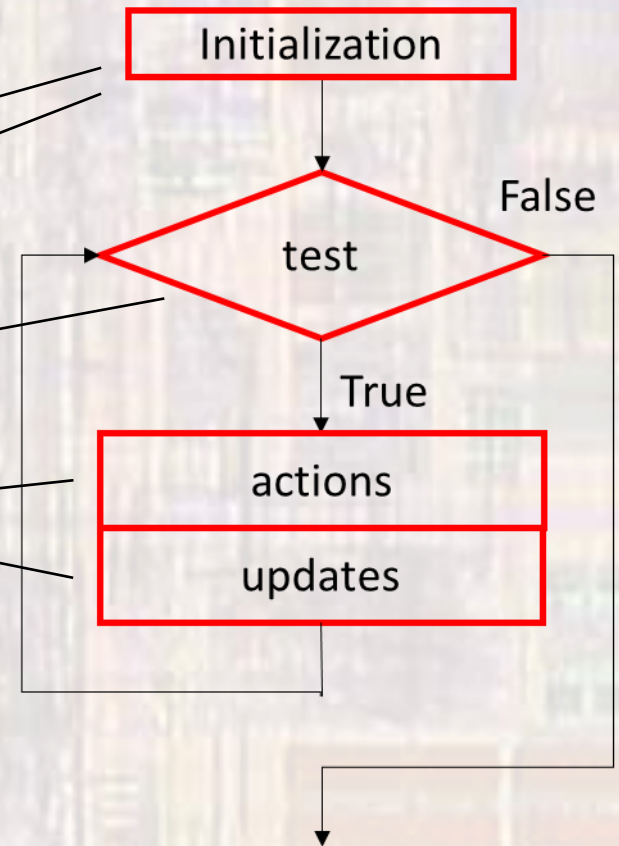


- Typically used in counter controlled loops

For

- For loop
 - Factorial – num!

```
int fact(int num){  
    int fact;  
    fact = 1;  
    int i;  
    for(i = 1; i <= num; i++){  
        fact = fact * i;  
    }  
    return fact;  
}
```



For

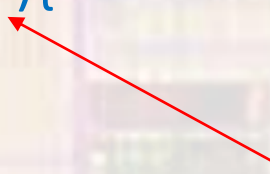
- For loop
 - Factorial – num!

```
int fact(int num){  
    int fact;  
    fact = 1;  
    int i;  
    for(i = 1; i <= num; i++){  
        fact = fact * i;  
    }  
    return fact;  
}
```

no semi-colon



Expression evaluates after the statement is evaluated → at the end of the for loop

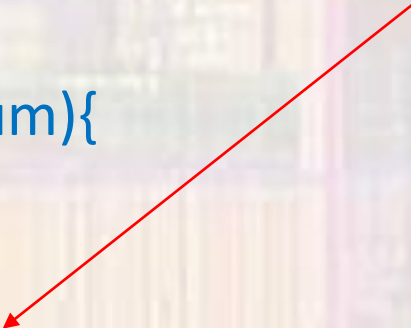


For

- For loop
 - Factorial – num!

```
int fact(int num){
    int i;
    int fact;
    for(i = 1, fact = 1; i <= num; i++){
        fact = fact * i;
    }
    return fact;
}
```

comma separated expressions
multi-part initializations



```
int fact(int num){
    int fact;
    fact = 1;
    int i;
    for(i = 1; i <= num; i++){
        fact = fact * i;
    }
    return fact;
}
```

For

- For loop
 - Factorial – num!

```
int fact(int num){  
    int fact;  
    fact = 1;  
    for(int i = 1; i <= num; i++){  
        fact = fact * i;  
    }  
    return fact;  
}
```

declaration included
in initialization
Not always supported

```
int fact(int num){  
    int fact;  
    fact = 1;  
    int i;  
    for(i = 1; i <= num; i++){  
        fact = fact * i;  
    }  
    return fact;  
}
```

For

- For loop
 - Flash an LED tied to pin 3, starting at 1 flash, up to N flashes N=5 -> ^ _ ^^ _ ^^^ _ ^^^^ _ ^^^^^ _ _ _ _ ^ _ ^^...

```
////////////////////////////////////
//
// for_class_ex_1 project
//
// created 5/12/21 by tj
// rev 0
//
////////////////////////////////////
//
// for example file for class
//
// Toggle an led multiple times
// LED is LD2
//
////////////////////////////////////

#include "mbed.h"
#include <stdio.h>

#define T_WAIT 200000 // in us - 200ms
#define CNT 5

// Create Global Objects
DigitalOut Led(LED1);

// Function Prototypes (Declarations)
void flash(int n);

int main(void){
    setbuf(stdout, NULL); // fix for terminal issue

    // splash
    printf("\n\nfor_class_ex_1 - example for EE2905\n");
    printf("Using Mbed OS version %d.%d.%d\n",
           MBED_MAJOR_VERSION, MBED_MINOR_VERSION, MBED_PATCH_VERSION);

    // run an endless loop
    while(1){
        // flash the led multiple times
        flash(CNT);

        wait_us(T_WAIT*8);
    } // end while

    return 0;
} // end main
```

```
// Function Definitions
void flash(int n){
    // flash led on and off multiple times at T_WAIT intervals
    int i;
    int j;
    for(i = 1; i <= n; i++){
        for(j = 1; j <= i; j++){
            Led.write(1);
            wait_us(T_WAIT);
            Led = 0;
            wait_us(T_WAIT);
        } // end for - j
        wait_us(T_WAIT*4);
    } // end for - i

    return;
} // end flash
```