

While

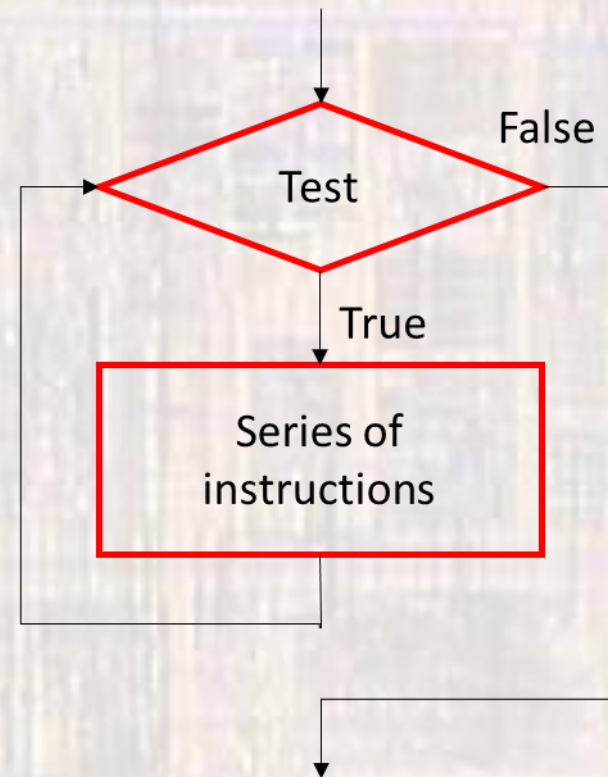
Last updated 5/18/21

While

- While loop

```
while(expression)  
statement;
```

```
while(expression){  
statements;  
}
```



- execute statements while expression is true

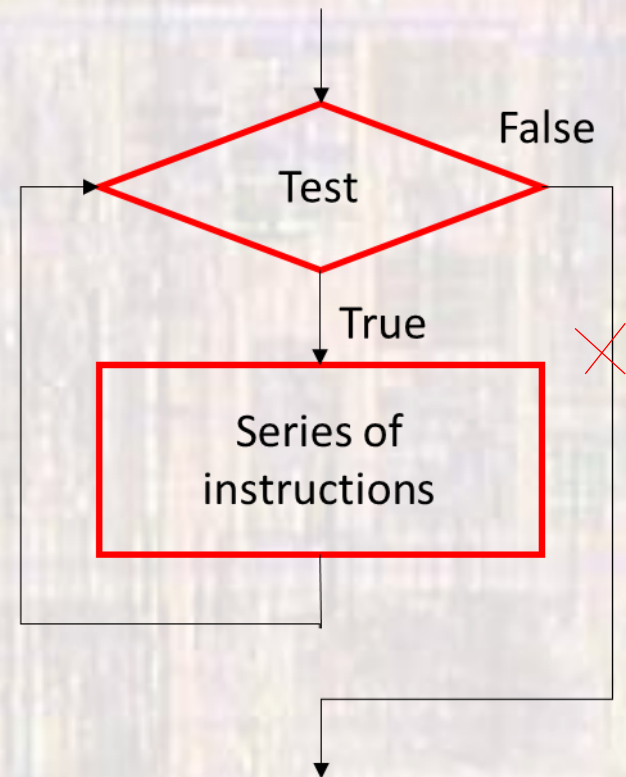
While

- While loop

- Forever

```
while(true)  
  statement
```

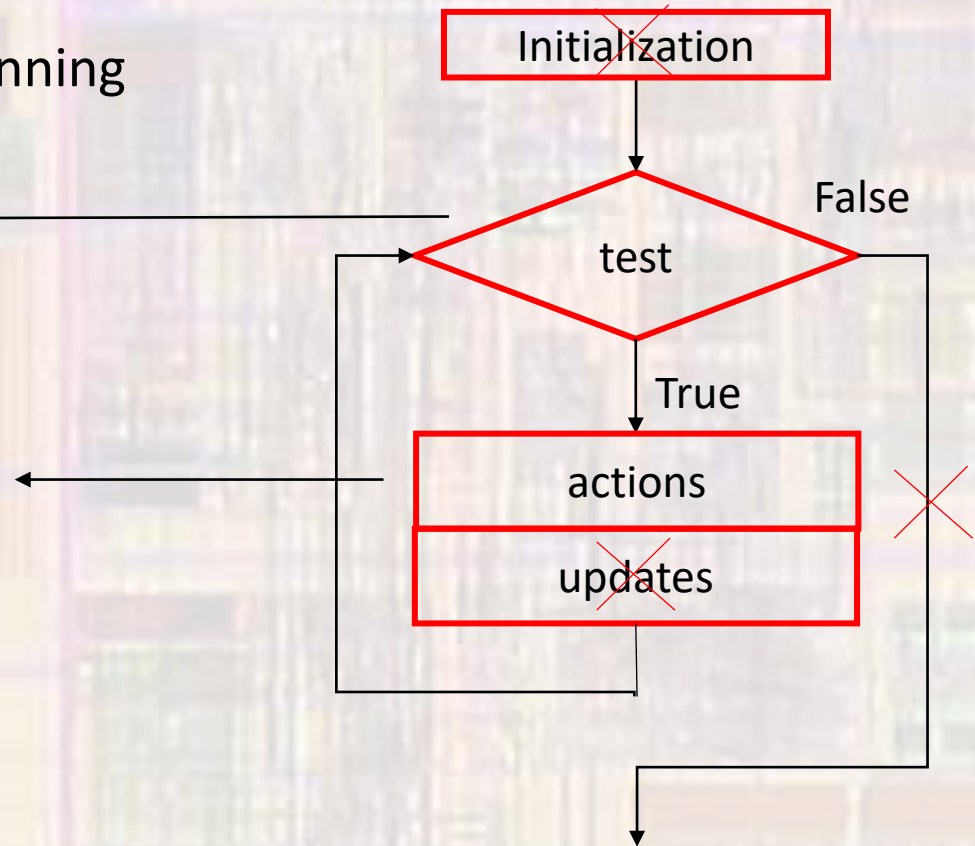
```
while(1){  
  statements  
}
```



While

- While loop - forever
 - Thermostat – always running

```
while(1){  
    temp = get_temp();  
    setting = get_setting();  
    if (temp > setting){  
        heater_off();  
        ac_on();  
    }  
    else{  
        heater_on();  
        ac_off();  
    } // end if  
} // end while
```



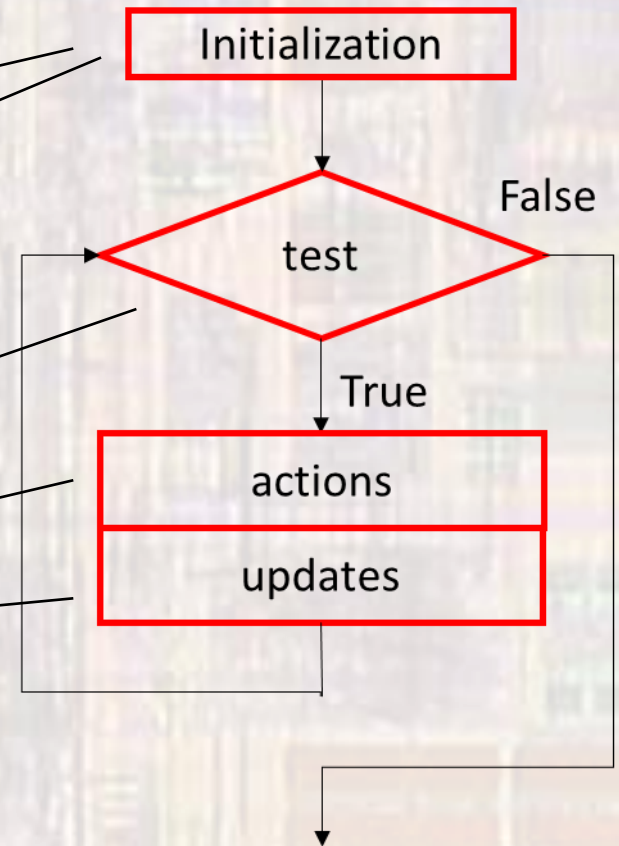
While

- While loop - conditional

- Factorial – num!

```
int fact(int num){  
    int fact;  
    fact = 1;  
    while(num > 0){  
        fact = fact * num;  
        num--;  
    } // end while  
    return fact;  
} // end fact
```

Full
Loop



While

- While loop - conditional
 - Copy pin 3 input to pin 4 as output when pin 5 is high

```
////////////////////////////////////
//
// while_class_ex_1 project
//
// created 5/12/21 by tj
// rev 0
//
////////////////////////////////////
//
// while example file for class
//
// Copy a pin while another pin is high
// Src Pin D4, dest pin D5, ctrl pin D6
//
////////////////////////////////////

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

// Create Global HW Objects
// SRC input pin
DigitalIn Src(D4);
// Dest output pin
DigitalOut Dest(D5);
// Control input pin
DigitalIn Control(D6);

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

    // splash
    printf("\n\nwhile_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){
    // copy src to dest when ctrl is high
    while(Control.read() == 1){
        if(Src == 1)
            Dest = 1;
        else
            Dest.write(0);
    } // end while - control
} // end while

return 0;
} // end main
```

alternate loop

```
// run an endless loop
while(1){
    // copy src to dest when ctrl is high
    while(Control){
        Dest = Src;
    } // end while - control
} // end while
```