for

[Control Structure]

Description

The `for` statement is used to repeat a block of statements enclosed in curly braces. An increment counter is usually used to increment and terminate the loop. The `for` statement is useful for any repetitive operation, and is often used in combination with arrays to operate on collections of data/pins.

Syntax

```
for (initialization; condition; increment) {
  // statement(s);
}
```

Parameters

`initialization`: happens first and exactly once.

`condition`: each time through the loop, `condition` is tested; if it's `true`, the statement block, and the **increment** is executed, then the **condition** is tested again. When the **condition** becomes `false`, the loop ends.

`increment`: executed each time through the loop when `condition` is `true`.

Example Code

```
// Turn  an LED on for a number of times
int  = 10;  // LED in series with 470 ohm resistor on pin 10

void setup() {
     pinMode(LED,OUTPUT)://  setup LED as an OUTPUT
}

void loop() {
  for (int i = 0; i <= 5; i++) {
```

```
    digitalWrite(LED,HIGH);
    delay(1000);
    digitalWrite(LED,LOW);
    delay(1000);
  }
}
```

while

[Control Structure]

Description

A while loop will loop continuously, and infinitely, until the expression inside the parenthesis, () becomes false. Something must change the tested variable, or the while loop will never exit. This could be in your code, such as an incremented variable, or an external condition, such as testing a sensor.

Syntax

```
while (condition) {
  // statement(s)
}
```

Parameters

condition: a boolean expression that evaluates to true or false.

```
var = 0; // variable

while (var < 200) {

  // do something repetitive 200 times

  Var++; // increment

}
```

Example Code

```
// Turn  an LED on for a number of times
int  = 10;  // LED in series with 470 ohm resistor on pin 10

void setup() {
     pinMode(LED,OUTPUT)://  setup LED as an OUTPUT
}

void loop() {
  int =i;
  while(i<200) {
    digitalWrite(LED,HIGH);
    delay(1000);
    digitalWrite(LED,LOW);
    delay(1000);
   i++
  }
}
```

ASSIGNMENT

1:Write a code turning 3 Led lights RED,BLUE and GREEN using the above types of loops
2:Write a code turning Leds in the following ways

- RED LED to turn on 5 times using for loop
- BLUE LED to turn on 6 times using while loop
- GREEN LED to turn on 2 time without using any loop function

(Assignments must be submitted on before 3:30pm without fail)