

# Control Structures

## 1. Comparison Operators & Boolean Logic

## 2. If else

## 3. While

## 4. For

## 5. Continue & Break

### Comparison Operators

- == : equal to
- > : greater than
- < : less than
- != : not equal to
- >= : greater than or equal to
- <= : less than or equal to

### Boolean Logic

- and : logical and
- or : logical or
- not : logical not

In [1]:

```
# Checking Condition

number = 9
expression = (number%2==0)
print("%d is even: %s" %(number, expression))

range_start = 90
range_end = 500
# @TODO: Give some realistic examples of using and/or/not
is_within_range = range_start <= number and number <= range_end
print("%d is within %d and %d: %s" %(number, range_start, range_end, is_within_range))
```

```
9 is even: False
9 is within 90 and 500: False
```

### if else

```
if expression:
    statement(s)
else:
    statement(s)
```

## if elif else

```
if expression:
    statement(s)
elif expression:
    statement(s)
else:
    statement(s)
```

In [2]:

```
number = 100

if number%2 == 0:
    print("%d is even number" % number)
else:
    print("%d is odd number" % number)

# @TODO: Give some realistic examples of using and/or/not
if number < 100:
    print("%d is less than 100" % number)
elif number < 200:
    print("%d is in between 100-199" % number)
elif number < 300:
    print("%d is in between 200-299" % number)
else:
    print("%d is greater than or equal to 300" % number)
```

```
100 is even number
100 is in between 100-199
```

## While loop

```
while expression:
    statement(s)
```

In [3]:

```
# while loop
count = 1
number = 9
while count <= 10:
    print('%d * %d -> %d' %(number, count, number*count))
    count = count + 1 # count += 1
```

```
9 * 1 -> 9
9 * 2 -> 18
9 * 3 -> 27
9 * 4 -> 36
9 * 5 -> 45
9 * 6 -> 54
9 * 7 -> 63
9 * 8 -> 72
9 * 9 -> 81
9 * 10 -> 90
```

## For loop

```
for iterating_var in sequence:
    statement(s)
```

In [4]:

```
# For Loop

for char in 'Mahendra Garodi':
    print("Current Character: ", char)

start_number = 100
end_number = 130

print("Even numbers in the range [%d - %d]" %(start_number, end_number))
for i in range(start_number, end_number):
    if i % 2 == 0:
        print(i, end=' ')
print()
print("Numbers in list: ")
for i in [10, 20, 30, 40, 50]:
    print(i)
```

```
Current Character: M
Current Character: a
Current Character: h
Current Character: e
Current Character: n
Current Character: d
Current Character: r
Current Character: a
Current Character: G
Current Character: a
Current Character: r
Current Character: o
Current Character: d
Current Character: i
Even numbers in the range [100 - 130)
100 102 104 106 108 110 112 114 116 118 120 122 124 126 128
Numbers in list:
10
20
30
40
50
```

In [5]:

```
# Continue and Break Statement
for i in range(0, 20):
    if i%5 == 0:
        continue
    if i == 16:
        break
    print(i, end=' ')
```

```
1 2 3 4 6 7 8 9 11 12 13 14
```

In [6]:

```
# Nested Loops
for number in range(1, 10):
    total = 1
    for x in range(1, number+1):
        total *= x
    print("Factorial(%d) = %d" %(number, total))
```

```
Factorial(1) = 1
Factorial(2) = 2
Factorial(3) = 6
Factorial(4) = 24
Factorial(5) = 120
Factorial(6) = 720
Factorial(7) = 5040
Factorial(8) = 40320
Factorial(9) = 362880
```