class SingleThreaded:

def printNumbers():

for x in range(1,101):

print(str(x)+" ")

return

def main():

SingleThreaded.printNumbers()

for y in range(101,0,-1):

print(str(y)+" ")

return

if \_\_name\_\_ == "\_\_main\_\_":

SingleThreaded.main()

import threading

class MultiThreaded(threading.Thread):

def run(self):

for x in range(1,101):

print(str(x)+" ")

return

def main():

child = MultiThreaded()

child.start()

for y in range(100,0,-1):

print(str(y)+" ")

return

if \_\_name\_\_ == "\_\_main\_\_":

MultiThreaded.main()

Sleep method of Time class:

import threading

import time

class MultiThreaded(threading.Thread):

def run(self):

for x in range(1,11):

print("Child : "+str(x))

time.sleep(0.5)

print("Child thread exits....")

return

def main():

child = MultiThreaded()

child.start()

for y in range(1,11):

print("Main : "+str(y))

time.sleep(1)

print("Main thread exits......")

return

if \_\_name\_\_ == "\_\_main\_\_":

MultiThreaded.main()

import threading

import time

n=0

sum=0

class JoinDemo(threading.Thread):

def run(self):

global n

global sum

print("Calc starts...")

for x in range(1,n+1):

sum = sum+x

time.sleep(0.1)

print("Calc completed...")

return

def main():

global n

global sum

print("Sum of First N numbers")

n = int(input('Enter n value : '))

child = JoinDemo()

child.start()

#time.sleep(10)

child.join()

print("Sum value : ", sum)

return

if \_\_name\_\_ == '\_\_main\_\_':

JoinDemo.main()

**Execution time of Single threaded application:**

import threading

import time

class PrintNumbers:

def print1to10():

for x in range(1,11):

print(str(x)+" ")

time.sleep(1)

return

def print10to1():

for x in range(10,0,-1):

print(str(x)+" ")

time.sleep(1)

return

class TimeCheck():

def main():

start = time.time()

PrintNumbers.print1to10()

PrintNumbers.print10to1()

end = time.time()

print("Time taken : ", round(end-start))

return

if \_\_name\_\_ == "\_\_main\_\_":

TimeCheck.main()

Execution time of Multi threaded application:

import threading

import time

class PrintNumbers:

def print1to10():

for x in range(1,11):

print(str(x)+" ")

time.sleep(1)

return

def print10to1():

for x in range(10,0,-1):

print(str(x)+" ")

time.sleep(1)

return

class Child1(threading.Thread):

def run(self):

PrintNumbers.print1to10()

time.sleep(1)

return

class Child2(threading.Thread):

def run(self):

PrintNumbers.print10to1()

time.sleep(1)

return

class TimeCheck():

def main():

t1 = Child1()

t2 = Child2()

start = time.time()

t1.start()

t2.start()

t1.join()

t2.join()

end = time.time()

print("Time taken : ", round(end-start))

return

if \_\_name\_\_ == "\_\_main\_\_":

TimeCheck.main()