***See-Saw Semaphore Problem***

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**PROBLEM STATEMENT**

We Have Two Friends Swetha and Binu playing seesaw in the playground .Using the concept of Semaphores we calculate the height of each person from the ground as they move up and down the See-Saw.

As the Person goes up the semaphore value decreases by 1 and his height from the ground increases and if the person goes down the semaphore value increases by 1 and his height from the ground decreases.

In the code we use Binary Semaphores such that the process is restricted to 0 or 1.

With the help of Semaphores we access the common resource by using Multiple threads t1,t2.

***CODE***

***Main.py***

import threading

import time

swetha\_Height = 1 #her height from the ground is 1m

binu\_Height = 7 #her height from the ground is 7m

swetha\_Velocity = 1 #speed in which she goes is 1m/s

binu\_Velocity = 1.5 #speed in which she goes is 1.5m/s

# A semaphore to indicate that an item is available

increase = threading.Semaphore() #default : Semaphore(1)

#number of Threads allowed to access simultaneously

decrease = threading.Semaphore(0)

#going up function

def goingUp():

global swetha\_Height

global binu\_Height

global swetha\_Velocity

global binu\_Velocity

for i in range(1):

while swetha\_Height < 7:

increase.acquire()

# to decrease the count of the semaphore by 1 in case the count is greater than zero.

swetha\_Height += swetha\_Velocity

print ("swetha is going up, her height currently from the ground is: ", swetha\_Height)

time.sleep(1)

decrease.release()

#to increase the count of the semaphore by 1 in case the count is zero.

while binu\_Height < 7:

increase.acquire()

binu\_Height += binu\_Velocity

print ("binu is going up, her height currently from the ground is: ", binu\_Height)

time.sleep(1)

decrease.release()

#going down function

def goingDown():

global swetha\_Height

global binu\_Height

global swetha\_Velocity

global binu\_Velocity

for i in range(1):

while binu\_Height > 1:

decrease.acquire()

#to increase the count of the semaphore by 1 in case the count is zero.

binu\_Height -= swetha\_Velocity

print ("binu is going down, her height currently from the ground is: ", binu\_Height, "\n")

time.sleep(1)

increase.release()

while swetha\_Height > 1:

decrease.acquire()

swetha\_Height -= binu\_Velocity

print ("swetha is going down, her height currently from the ground is: ", swetha\_Height, "\n")

time.sleep(1)

increase.release()

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

t1 = threading.Thread(target=goingUp) #calling the function goingup() using threads

t1.start()

#Thread activity t1 is started by calling the start() method

t2 = threading.Thread(target=goingDown) #calling the function goingup() using threads

t2.start()

#Thread activity t2 is started by calling the start() method

t1.join()

t2.join()

***Setup.py***

from distutils.core import setup

import py2exe

setup(

console=['main.py'] )