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**Excelssior Education Society’s**

**K.C.College Of Engineering and Management Studies and Research**

**(Affiliated to the University of Mumbai)**

**MithBunder Road, Near Hume Pipe, Kopri, Thane (E)-400603**

COMPUTER GRAPHICS

OPERATING SYSTEM ALGORITHMS VISUALIZATION

GUIDED BY: PROF. Pratap Nair

Viraj Dalvi

Ketki Chavan

Shreyika Mandale

**Project Name**:- Operating System Algorithms Visualization

**Aim :**- To Study OS algorithms with the help of visualization through computer graphics

**Theory:-**

Different OS algorithms like

FCFS (first come first serve), the process which arrives first is assigned the cpu first and likewise all other processes are assigned the cpu,

SJF (shortest job first), the process having the least burst time is taken first then the second least is taken and likewise all other processes are assigned the cpu,

Priority algorithm in which each process is assigned a priority and the process with the highest priority is taken first

The above algorithms are solved and explained using shapes which are assigned particular processes and according to its priority it goes in the cpu and average waiting time is calculated through animation using random and time module in Tkinter (Python) which makes it easy to understand and visualize.

Git link: <https://github.com/virajdalvi/CG-OS.git>

**Program:-**

from tkinter import \*

from tkinter import messagebox

import tkinter as tk

import os

import random

import time

root = Tk()

root.title('OS algorithm visualisation ')

root.geometry('1450x800')

root.configure(bg="tomato")

root.resizable(0,0)

global e1,e2,e3,e4,e5,y1,y2,y3,y4,y5,avgwt,avgtat

def ball():

tk=Tk()

tk.title("Graphics")

Height=1000

Width=1000

canvas=Canvas(tk,width=Width,height=Height)

canvas.pack()

xspeed=9

yspeed=0

x1=9

y11=0

canvas.create\_rectangle(200,100,300,150,outline="#fb0",fill="#fb0")

canvas.create\_rectangle(700,100,900,400,outline="#fb0",fill="#fb0")

ball1=canvas.create\_oval(100,300,150,250,fil="red")

ball2=canvas.create\_oval(200,300,250,250,fil="red")

ball3=canvas.create\_oval(300,300,350,250,fil="red")

ball4=canvas.create\_oval(400,300,450,250,fill="red")

ball5=canvas.create\_oval(500,300,550,250,fill="red")

text5=canvas.create\_text(525,275,text=y1,font=18)

text4=canvas.create\_text(425,275,text=y2,font=18)

text3=canvas.create\_text(325,275,text=y3,font=18)

text2=canvas.create\_text(225,275,text=y4,font=18)

text1=canvas.create\_text(125,275,text=y5,font=18)

while True:

canvas.move(ball5,xspeed,yspeed)

canvas.move(text5,x1,y11)

pos1=canvas.coords(text5)

pos=canvas.coords(ball5)

if pos[3]>=1000 or pos[1]<=0:

yspeed=-yspeed

y11=-y11

if pos[2]>=800 or pos[0]<=0:

canvas.delete(ball5)

canvas.delete(text5)

break

tk.update()

time.sleep(0.1)

global val

val=0

val = int(y1) + val

t1=canvas.create\_text(250,130,text=val,font=18)

while True:

canvas.move(ball4,xspeed,yspeed)

pos=canvas.coords(ball4)

canvas.move(text4,x1,y11)

pos1=canvas.coords(text4)

if pos[3]>=1000 or pos[1]<=0:

yspeed=-yspeed

y11=-y11

if pos[2]>=800 or pos[0]<=0:

canvas.delete(ball4)

canvas.delete(text4)

break

tk.update()

time.sleep(0.1)

canvas.delete(t1)

val = int(y2) + val

t1=canvas.create\_text(250,130,text=val,font=18)

while True:

canvas.move(ball3,xspeed,yspeed)

pos=canvas.coords(ball3)

canvas.move(text3,x1,y11)

pos1=canvas.coords(text3)

if pos[3]>=1000 or pos[1]<=0:

yspeed=-yspeed

y11=-y11

if pos[2]>=800 or pos[0]<=0:

canvas.delete(ball3)

canvas.delete(text3)

break

tk.update()

time.sleep(0.1)

canvas.delete(t1)

val = int(y3) + val

t1=canvas.create\_text(250,130,text=val,font=18)

while True:

canvas.move(ball2,xspeed,yspeed)

pos=canvas.coords(ball2)

canvas.move(text2,x1,y11)

pos1=canvas.coords(text2)

if pos[3]>=1000 or pos[1]<=0:

yspeed=-yspeed

y11=-y11

if pos[2]>=800 or pos[0]<=0:

canvas.delete(ball2)

canvas.delete(text2)

break

tk.update()

time.sleep(0.1)

canvas.delete(t1)

val = int(y4) + val

t1=canvas.create\_text(250,130,text=val,font=18)

while True:

canvas.move(ball1,xspeed,yspeed)

pos=canvas.coords(ball1)

canvas.move(text1,x1,y11)

pos1=canvas.coords(text1)

if pos[3]>=1000 or pos[1]<=0:

yspeed=-yspeed

y11=-y11

if pos[2]>=800 or pos[0]<=0:

canvas.delete(ball1)

canvas.delete(text1)

break

tk.update()

time.sleep(0.1)

canvas.delete(t1)

val = int(y5) + val

t1=canvas.create\_text(250,130,text=val,font=18)

t2=canvas.create\_text(300,200,text='Average waiting time :'+str(avgwt),font=18)

def vis1():

tk=Tk()

tk.title("Graphics")

tk.resizable(0,0)

Height=1000

Width=1000

canvas=Canvas(tk,width=Width,height=Height)

canvas.pack()

bt1=Button(tk, text="START", width=10, command=ball)

bt1.place(x=500,y=500)

def vis2():

global avgwt

sj=[]

tk=Tk()

tk.title("Graphics")

tk.resizable(0,0)

Height=1000

Width=1000

canvas=Canvas(tk,width=Width,height=Height)

canvas.pack()

v1=Label(master=tk,text="Values entered by the user",fg="green",font=("helvetica",15,"bold"))

v1.place(x=100,y=155)

ball1=canvas.create\_oval(100,300,150,250,fil="red")

ball2=canvas.create\_oval(200,300,250,250,fil="red")

ball3=canvas.create\_oval(300,300,350,250,fil="red")

ball4=canvas.create\_oval(400,300,450,250,fill="red")

ball5=canvas.create\_oval(500,300,550,250,fill="red")

text5=canvas.create\_text(525,275,text=y1,font=18)

text4=canvas.create\_text(425,275,text=y2,font=18)

text3=canvas.create\_text(325,275,text=y3,font=18)

text2=canvas.create\_text(225,275,text=y4,font=18)

text1=canvas.create\_text(125,275,text=y5,font=18)

v2=Label(master=tk,text="In SJF the shortest job needs to be execute first Hence we will sort them in ascending order",fg="green",font=("helvetica",15,"bold"))

v2.place(x=100,y=350)

v3=Label(master=tk,text="Click the button to arrange them in ascending order and visualization:",fg="green",font=("helvetica",15,"bold"))

v3.place(x=100,y=400)

sj.append(y1)

sj.append(y2)

sj.append(y3)

sj.append(y4)

sj.append(y5)

sj.sort()

def ball1():

global avgwt

xspeed=9

yspeed=0

print(sj)

x1=9

y11=0

canvas.create\_rectangle(700,500,900,650,outline="#fb0",fill="#fb0")

canvas.create\_rectangle(200,100,300,150,outline="#fb0",fill="#fb0")

ball1=canvas.create\_oval(100,550,150,600,fil="red")

ball2=canvas.create\_oval(200,550,250,600,fil="red")

ball3=canvas.create\_oval(300,550,350,600,fil="red")

ball4=canvas.create\_oval(400,550,450,600,fill="red")

ball5=canvas.create\_oval(500,550,550,600,fill="red")

text5=canvas.create\_text(525,575,text=sj[0],font=18)

text4=canvas.create\_text(425,575,text=sj[1],font=18)

text3=canvas.create\_text(325,575,text=sj[2],font=18)

text2=canvas.create\_text(225,575,text=sj[3],font=18)

text1=canvas.create\_text(125,575,text=sj[4],font=18)

while True:

canvas.move(ball5,xspeed,yspeed)

canvas.move(text5,x1,y11)

pos1=canvas.coords(text5)

pos=canvas.coords(ball5)

if pos[3]>=1000 or pos[1]<=0:

yspeed=-yspeed

y1=-y1

if pos[2]>=800 or pos[0]<=0:

canvas.delete(ball5)

canvas.delete(text5)

break

tk.update()

time.sleep(0.1)

global val

val=0

val = int(sj[0])+val

t1=canvas.create\_text(250,130,text=val,font=18)

while True:

canvas.move(ball4,xspeed,yspeed)

pos=canvas.coords(ball4)

canvas.move(text4,x1,y11)

pos1=canvas.coords(text4)

if pos[3]>=1000 or pos[1]<=0:

yspeed=-yspeed

y1=-y1

if pos[2]>=800 or pos[0]<=0:

canvas.delete(ball4)

canvas.delete(text4)

break

tk.update()

time.sleep(0.1)

canvas.delete(t1)

val = int(sj[1])+val

t1=canvas.create\_text(250,130,text=val,font=18)

while True:

canvas.move(ball3,xspeed,yspeed)

pos=canvas.coords(ball3)

canvas.move(text3,x1,y11)

pos1=canvas.coords(text3)

if pos[3]>=1000 or pos[1]<=0:

yspeed=-yspeed

y1=-y1

if pos[2]>=800 or pos[0]<=0:

canvas.delete(ball3)

canvas.delete(text3)

break

tk.update()

time.sleep(0.1)

canvas.delete(t1)

val = int(sj[2])+val

t1=canvas.create\_text(250,130,text=val,font=18)

while True:

canvas.move(ball2,xspeed,yspeed)

pos=canvas.coords(ball2)

canvas.move(text2,x1,y11)

pos1=canvas.coords(text2)

if pos[3]>=1000 or pos[1]<=0:

yspeed=-yspeed

y1=-y1

if pos[2]>=800 or pos[0]<=0:

canvas.delete(ball2)

canvas.delete(text2)

break

tk.update()

time.sleep(0.1)

canvas.delete(t1)

val = int(sj[3])+val

t1=canvas.create\_text(250,130,text=val,font=18)

while True:

canvas.move(ball1,xspeed,yspeed)

pos=canvas.coords(ball1)

canvas.move(text1,x1,y11)

pos1=canvas.coords(text1)

if pos[3]>=1000 or pos[1]<=0:

yspeed=-yspeed

y1=-y1

if pos[2]>=800 or pos[0]<=0:

canvas.delete(ball1)

canvas.delete(text1)

break

tk.update()

time.sleep(0.1)

canvas.delete(t1)

val = int(sj[4])+val

t1=canvas.create\_text(250,130,text=val,font=18)

t2=canvas.create\_text(500,130,text='Average waiting time : '+str(avgwt),font=18)

bt1=Button(tk, text="START", width=8, command=ball1)

bt1.place(x=800,y=400)

def ball3():

global e1,e2,e3,e4,e5,y1,y2,y3,y4,y5,avgwt

tk=Tk()

tk.title("Graphics")

tk.configure(bg="blue")

tk.resizable(0,0)

Height=1000

Width=1000

canvas=Canvas(tk,width=Width,height=Height)

canvas.pack()

global val

pri=[]

pri.append(y1)

pri.append(y2)

pri.append(y3)

pri.append(y4)

pri.append(y5)

pri.sort()

print(pri)

i1=(pri.index(y1))

i2=(pri.index(y2))

i3=(pri.index(y3))

i4=(pri.index(y4))

i5=(pri.index(y5))

btt=[]

btt.insert(i1,v1)

btt.insert(i2,v2)

btt.insert(i3,v3)

btt.insert(i4,v4)

btt.insert(i5,v5)

print(btt)

val=0

xspeed=9

yspeed=0

x1=9

y11=0

canvas.create\_rectangle(200,100,500,150,outline="#fb0",fill="#fb0")

canvas.create\_rectangle(700,100,900,400,outline="#fb0",fill="#fb0")

#RED ball3S FOR BRUST TIME

ball31=canvas.create\_oval(100,300,150,250,fil="red")

ball32=canvas.create\_oval(200,300,250,250,fil="red")

ball33=canvas.create\_oval(300,300,350,250,fil="red")

ball34=canvas.create\_oval(400,300,450,250,fill="red")

ball35=canvas.create\_oval(500,300,550,250,fill="red")

#TEXT FOR BRUST TIME

text5=canvas.create\_text(525,275,text=btt[0],font=18)

text4=canvas.create\_text(425,275,text=btt[1],font=18)

text3=canvas.create\_text(325,275,text=btt[2],font=18)

text2=canvas.create\_text(225,275,text=btt[3],font=18)

text1=canvas.create\_text(125,275,text=btt[4],font=18)

#GREEN ball3S FOR PRIORITY

ball36=canvas.create\_oval(100,400,150,350,fil="green")

ball37=canvas.create\_oval(200,400,250,350,fil="green")

ball38=canvas.create\_oval(300,400,350,350,fil="green")

ball39=canvas.create\_oval(400,400,450,350,fill="green")

ball310=canvas.create\_oval(500,400,550,350,fill="green")

#TEXT FOR PRIORITY

text10=canvas.create\_text(525,375,text=pri[0],font=18)

text9=canvas.create\_text(425,375,text=pri[1],font=18)

text8=canvas.create\_text(325,375,text=pri[2],font=18)

text7=canvas.create\_text(225,375,text=pri[3],font=18)

text6=canvas.create\_text(125,375,text=pri[4],font=18)

q3=Label(master=tk,text="IN THIS ALGORITHM THE PROCESS DISPATCHED WILL BE THE ONE" '\n' "THAT HAS HIGGEST PRIORITY AMONGST THE PROCESS WAITING IN THE QUEUE",bg="tomato",fg="green",font=("helvetica",15,"bold"))

q3.place(x=100,y=600)

while True:

canvas.move(ball35,xspeed,yspeed)

canvas.move(text5,x1,y11)

pos1=canvas.coords(text5)

pos=canvas.coords(ball35)

if pos[3]>=1000 or pos[1]<=0:

yspeed=-yspeed

y11=-y11

if pos[2]>=800 or pos[0]<=0:

canvas.delete(ball35)

canvas.delete(text5)

break

tk.update()

time.sleep(0.1)

val = int(btt[0]) + val

t1=canvas.create\_text(350,130,text=val,font=18)

while True:

canvas.move(ball34,xspeed,yspeed)

pos=canvas.coords(ball34)

canvas.move(text4,x1,y11)

pos1=canvas.coords(text4)

if pos[3]>=1000 or pos[1]<=0:

yspeed=-yspeed

y11=-y11

if pos[2]>=800 or pos[0]<=0:

canvas.delete(ball34)

canvas.delete(text4)

break

tk.update()

time.sleep(0.1)

canvas.delete(t1)

val = int(btt[1]) + val

t1=canvas.create\_text(350,130,text=val,font=18)

while True:

canvas.move(ball33,xspeed,yspeed)

pos=canvas.coords(ball33)

canvas.move(text3,x1,y11)

pos1=canvas.coords(text3)

if pos[3]>=1000 or pos[1]<=0:

yspeed=-yspeed

y11=-y11

if pos[2]>=800 or pos[0]<=0:

canvas.delete(ball33)

canvas.delete(text3)

break

tk.update()

time.sleep(0.1)

canvas.delete(t1)

val = int(btt[2]) + val

t1=canvas.create\_text(350,130,text=val,font=18)

while True:

canvas.move(ball32,xspeed,yspeed)

pos=canvas.coords(ball32)

canvas.move(text2,x1,y11)

pos1=canvas.coords(text2)

if pos[3]>=1000 or pos[1]<=0:

yspeed=-yspeed

y11=-y11

if pos[2]>=800 or pos[0]<=0:

canvas.delete(ball32)

canvas.delete(text2)

break

tk.update()

time.sleep(0.1)

canvas.delete(t1)

val = int(btt[3]) + val

t1=canvas.create\_text(350,130,text=val,font=18)

while True:

canvas.move(ball31,xspeed,yspeed)

pos=canvas.coords(ball31)

canvas.move(text1,x1,y11)

pos1=canvas.coords(text1)

if pos[3]>=1000 or pos[1]<=0:

yspeed=-yspeed

y11=-y11

if pos[2]>=800 or pos[0]<=0:

canvas.delete(ball31)

canvas.delete(text1)

break

tk.update()

time.sleep(0.1)

canvas.delete(t1)

val = int(btt[4]) + val

t1=canvas.create\_text(350,130,text=val,font=18)

t2=canvas.create\_text(400,200,text='Average waiting time : '+str(avgwt),font=18)

"""q1=Label(master=tk,text="AVERAGE WAITING TIME = ",bg="tomato",fg="green",font=("helvetica",15,"bold"))

q1.place(x=400,y=100)

q2=Label(master=tk,text=avgwt,bg="tomato",fg="green",font=("helvetica",15,"bold"))

q2.place(x=550,y=100)"""

def vis3():

tk=Tk()

tk.title("Graphics")

tk.resizable(0,0)

Height=1000

Width=1000

canvas=Canvas(tk,width=Width,height=Height)

canvas.pack()

bt1=Button(tk, text="START", width=50, command=ball3)

bt1.place(x=500,y=500)

def clear1():

e1.delete(0,END)

e2.delete(0,END)

e3.delete(0,END)

e4.delete(0,END)

e5.delete(0,END)

def clear2():

e1.delete(0,END)

e2.delete(0,END)

e3.delete(0,END)

e4.delete(0,END)

e5.delete(0,END)

s1.delete(0,END)

s2.delete(0,END)

s3.delete(0,END)

s4.delete(0,END)

s5.delete(0,END)

def totale1():

window=Tk()

window.geometry("1450x800")

window.title("SJF")

window.configure(bg="tomato")

window.resizable(0,0)

title=Label(master=window,text="SJF",bg="YELLOW",fg="green",font=("helvetica",70,"bold"))

title.place(x=1000,y=90)

global e1,e2,e3,e4,e5,y1,y2,y3,y4,y5,avgwt

n=5

if(e1.get()==""):

y1=0

else:

y1=int(e1.get())

if(e2.get()==""):

y2=0

else:

y2=int(e2.get())

if(e3.get()==""):

y3=0

else:

y3=int(e3.get())

if(e4.get()==""):

y4=0

else:

y4=int(e4.get())

if(e5.get()==""):

y5=0

else:

y5=int(e5.get())

p=[]

for i in range(0,n):

p.insert(i,i+1)

bt=[]

bt.append(y1)

bt.append(y2)

bt.append(y3)

bt.append(y4)

bt.append(y5)

wt=[]

avgwt=0

tat=[]

avgtat=0

wt.insert(0,0)

tat.insert(0,bt[0])

for i in range(0,n-1):

for j in range(0,n-i-1):

if(bt[j]>bt[j+1]):

temp=bt[j]

bt[j]=bt[j+1]

bt[j+1]=temp

temp=p[j]

p[j]=p[j+1]

p[j+1]=temp

for i in range(1,n):

wt.insert(i,wt[i-1]+bt[i-1])

avgwt+=wt[i]

for i in range(0,n):

tat.insert(i,wt[i]+bt[i])

avgtat+=tat[i]

avgwt=float(avgwt)/n

avgtat=float(avgtat)/n

w1=Label(master=window,text=wt[0],bg="tomato",fg="green",font=("helvetica",25,"bold"))

w1.place(x=575,y=155)

w2=Label(master=window,text=wt[1],bg="tomato",fg="green",font=("helvetica",25,"bold"))

w2.place(x=575,y=255)

w3=Label(master=window,text=wt[2],bg="tomato",fg="green",font=("helvetica",25,"bold"))

w3.place(x=575,y=355)

w4=Label(master=window,text=wt[3],bg="tomato",fg="green",font=("helvetica",25,"bold"))

w4.place(x=575,y=455)

w5=Label(master=window,text=wt[4],bg="tomato",fg="green",font=("helvetica",25,"bold"))

w5.place(x=575,y=555)

for i in range(0,n):

t1=Label(master=window,text=tat[0],bg="tomato",fg="green",font=("helvetica",25,"bold"))

t1.place(x=775,y=155)

t2=Label(master=window,text=tat[1],bg="tomato",fg="green",font=("helvetica",25,"bold"))

t2.place(x=775,y=255)

t3=Label(master=window,text=tat[2],bg="tomato",fg="green",font=("helvetica",25,"bold"))

t3.place(x=775,y=355)

t4=Label(master=window,text=tat[3],bg="tomato",fg="green",font=("helvetica",25,"bold"))

t4.place(x=775,y=455)

t5=Label(master=window,text=tat[4],bg="tomato",fg="green",font=("helvetica",25,"bold"))

t5.place(x=775,y=555)

for i in range(0,n):

l1=Label(master=window,text=p[0],bg="tomato",fg="green",font=("helvetica",25,"bold"))

l1.place(x=200,y=155)

l2=Label(master=window,text=p[1],bg="tomato",fg="green",font=("helvetica",25,"bold"))

l2.place(x=200,y=255)

l3=Label(master=window,text=p[2],bg="tomato",fg="green",font=("helvetica",25,"bold"))

l3.place(x=200,y=355)

l4=Label(master=window,text=p[3],bg="tomato",fg="green",font=("helvetica",25,"bold"))

l4.place(x=200,y=455)

l5=Label(master=window,text=p[4],bg="tomato",fg="green",font=("helvetica",25,"bold"))

l5.place(x=200,y=555)

for i in range(0,n):

q1=Label(master=window,text=bt[0],bg="tomato",fg="green",font=("helvetica",25,"bold"))

q1.place(x=375,y=155)

q2=Label(master=window,text=bt[1],bg="tomato",fg="green",font=("helvetica",25,"bold"))

q2.place(x=375,y=255)

q3=Label(master=window,text=bt[2],bg="tomato",fg="green",font=("helvetica",25,"bold"))

q3.place(x=375,y=355)

q4=Label(master=window,text=bt[3],bg="tomato",fg="green",font=("helvetica",25,"bold"))

q4.place(x=375,y=455)

q5=Label(master=window,text=bt[4],bg="tomato",fg="green",font=("helvetica",25,"bold"))

q5.place(x=375,y=555)

awt=Label(master=window,text="Average waiting time:",bg="tomato",fg="green",font=("helvetica",20,"bold"))

awt.place(x=890,y=300)

awta=Label(master=window,text=avgwt,bg="tomato",fg="green",font=("helvetica",20,"bold"))

awta.place(x=1190,y=300)

tatb=Label(master=window,text="Average turn around time:",bg="tomato",fg="green",font=("helvetica",20,"bold"))

tatb.place(x=890,y=400)

tata=Label(master=window,text=avgtat,bg="tomato",fg="green",font=("helvetica",20,"bold"))

tata.place(x=1250,y=400)

total=Button(master=window,text="CALCULATE",bg="white",command=totale1,fg="green",font=("helvetica",15,"bold"))

total.place(x=525,y=650)

m0=Label(master=window,text="BRUST TIME",bg="tomato",fg="green",font=("helvetica",15,"bold"))

m0.place(x=20,y=80)

m1=Label(master=window,text="PROCESSES",bg="tomato",fg="green",font=("helvetica",15,"bold"))

m1.place(x=170,y=80)

m2=Label(master=window,text="NEW TIME",bg="tomato",fg="green",font=("helvetica",15,"bold"))

m2.place(x=320,y=80)

m3=Label(master=window,text="WAITING TIME",bg="tomato",fg="green",font=("helvetica",15,"bold"))

m3.place(x=500,y=80)

m4=Label(master=window,text="TURN AROUND TIME",bg="tomato",fg="green",font=("helvetica",15,"bold"))

m4.place(x=700,y=80)

e1=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

e1.place(x=50,y=155)

e2=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

e2.place(x=50,y=255)

e3=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

e3.place(x=50,y=355)

e4=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

e4.place(x=50,y=455)

e5=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

e5.place(x=50,y=555)

e1.insert(END,y1)

e2.insert(END,y2)

e3.insert(END,y3)

e4.insert(END,y4)

e5.insert(END,y5)

clear=Button(master=window,text="CLEAR",bg="white",command=clear1,fg="red",font=("helvetica",15,"bold"))

clear.place(x=800,y=650)

vis=Button(master=window,text="VISUALIZATION",bg="white",command=vis2,fg="red",font=("helvetica",15,"bold"))

vis.place(x=1075,y=650)

def totale3():

window=Tk()

window.geometry("1450x800")

window.title("priority")

window.configure(bg="tomato")

global e1,e2,e3,e4,e5,y1,y2,y3,y4,y5

global s1,s2,s3,s4,s5,v1,v2,v3,v4,v5,y1,y2,y3,y4,y5,avgwt

n=5

wt=[]

tat=[]

if(e1.get()==""):

y1=0

else:

y1=int(e1.get())

if(e2.get()==""):

y2=0

else:

y2=int(e2.get())

if(e3.get()==""):

y3=0

else:

y3=int(e3.get())

if(e4.get()==""):

y4=0

else:

y4=int(e4.get())

if(e5.get()==""):

y5=0

else:

y5=int(e5.get())

#TAKING BRUST VALUES

if(s1.get()==""):

v1=0

else:

v1=int(s1.get())

if(s2.get()==""):

v2=0

else:

v2=int(s2.get())

if(s3.get()==""):

v3=0

else:

v3=int(s3.get())

if(s4.get()==""):

v4=0

else:

v4=int(s4.get())

if(s5.get()==""):

v5=0

else:

v5=int(s5.get())

priority=[]

priority.append(y1)

priority.append(y2)

priority.append(y3)

priority.append(y4)

priority.append(y5)

print(priority)

bt=[]

bt.append(v1)

bt.append(v2)

bt.append(v3)

bt.append(v4)

bt.append(v5)

print(bt)

#processes=[]

all=[]

wt.insert(0,0)

tat = []

# START FROM HERE

for i in range(n):

all.append([priority[i],bt[i],i+1])

all.sort()

print(all)

i = 0

while i!=n-1 :

print('while')

for i in range(n-1) :

if all[i][0] == all[i+1][0]:

temp = all[i][1]

all[i][1] = all[i+1][1]

all[i+1][1]=temp

i+=1

print(all)

for i in range(1,n):

wt.append(wt[i-1]+all[i-1][1])

avgwt = 0

for i in range(n):

avgwt = avgwt + wt[i]

avgwt = avgwt/n

for i in range(n):

tat.append(wt[i]+all[i][1])

avgtat = 0

for i in range(n):

avgtat = avgtat + tat[i]

avgtat = avgtat/n

#TILL HERE

print(avgwt)

print(avgtat)

t1=Label(master=window,text=wt[0],bg="tomato",fg="green",font=("helvetica",25,"bold"))

t1.place(x=575,y=155)

t2=Label(master=window,text=wt[1],bg="tomato",fg="green",font=("helvetica",25,"bold"))

t2.place(x=575,y=255)

t3=Label(master=window,text=wt[2],bg="tomato",fg="green",font=("helvetica",25,"bold"))

t3.place(x=575,y=355)

t4=Label(master=window,text=wt[3],bg="tomato",fg="green",font=("helvetica",25,"bold"))

t4.place(x=575,y=455)

t5=Label(master=window,text=wt[4],bg="tomato",fg="green",font=("helvetica",25,"bold"))

t5.place(x=575,y=555)

o1=Label(master=window,text=tat[0],bg="tomato",fg="green",font=("helvetica",25,"bold"))

o1.place(x=775,y=155)

o2=Label(master=window,text=tat[1],bg="tomato",fg="green",font=("helvetica",25,"bold"))

o2.place(x=775,y=255)

o3=Label(master=window,text=tat[2],bg="tomato",fg="green",font=("helvetica",25,"bold"))

o3.place(x=775,y=355)

o4=Label(master=window,text=tat[3],bg="tomato",fg="green",font=("helvetica",25,"bold"))

o4.place(x=775,y=455)

o5=Label(master=window,text=tat[4],bg="tomato",fg="green",font=("helvetica",25,"bold"))

o5.place(x=775,y=555)

awta=Label(master=window,text=avgwt,bg="tomato",fg="green",font=("helvetica",15,"bold"))

awta.place(x=1180,y=300)

tata=Label(master=window,text=avgtat,bg="tomato",fg="green",font=("helvetica",15,"bold"))

tata.place(x=1230,y=400)

total=Button(master=window,text="CALCULATE",bg="white",command=totale3,fg="green",font=("helvetica",15,"bold"))

total.place(x=525,y=650)

vis=Button(master=window,text="VISUALIZATION",bg="white",command=vis3,fg="red",font=("helvetica",15,"bold"))

vis.place(x=1075,y=650)

m0=Label(master=window,text="PRIORITY",bg="tomato",fg="green",font=("helvetica",15,"bold"))

m0.place(x=150,y=80)

title=Label(master=window,text="PRIORITY",bg="YELLOW",fg="green",font=("helvetica",40,"bold"))

title.place(x=1000,y=90)

m1=Label(master=window,text="BURST TIME",bg="tomato",fg="green",font=("helvetica",15,"bold"))

m1.place(x=320,y=80)

m2=Label(master=window,text="WAITING TIME",bg="tomato",fg="green",font=("helvetica",15,"bold"))

m2.place(x=500,y=80)

m3=Label(master=window,text="TURN AROUND TIME",bg="tomato",fg="green",font=("helvetica",15,"bold"))

m3.place(x=700,y=80)

#priority

e1=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

e1.place(x=175,y=155)

e2=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

e2.place(x=175,y=255)

e3=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

e3.place(x=175,y=355)

e4=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

e4.place(x=175,y=455)

e5=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

e5.place(x=175,y=555)

#BT

s1=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

s1.place(x=375,y=155)

s2=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

s2.place(x=375,y=255)

s3=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

s3.place(x=375,y=355)

s4=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

s4.place(x=375,y=455)

s5=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

s5.place(x=375,y=555)

l1=Label(master=window,text="PROCESS 1 :",bg="tomato",fg="green",font=("helvetica",15,"bold"))

l1.place(x=20,y=155)

l2=Label(master=window,text="PROCESS 2 :",bg="tomato",fg="green",font=("helvetica",15,"bold"))

l2.place(x=20,y=255)

l3=Label(master=window,text="PROCESS 3 :",bg="tomato",fg="green",font=("helvetica",15,"bold"))

l3.place(x=20,y=355)

l4=Label(master=window,text="PROCESS 4 :",bg="tomato",fg="green",font=("helvetica",15,"bold"))

l4.place(x=20,y=455)

l5=Label(master=window,text="PROCESS 5 :",bg="tomato",fg="green",font=("helvetica",15,"bold"))

l5.place(x=20,y=555)

e1.insert(END,y1)

e2.insert(END,y2)

e3.insert(END,y3)

e4.insert(END,y4)

e5.insert(END,y5)

s1.insert(END,v1)

s2.insert(END,v2)

s3.insert(END,v3)

s4.insert(END,v4)

s5.insert(END,v5)

awt=Label(master=window,text="Average waiting time:",bg="tomato",fg="green",font=("helvetica",15,"bold"))

awt.place(x=975,y=300)

tatb=Label(master=window,text="Average turn around time:",bg="tomato",fg="green",font=("helvetica",15,"bold"))

tatb.place(x=975,y=400)

clear=Button(master=window,text="CLEAR",bg="white",command=clear2,fg="red",font=("helvetica",15,"bold"))

clear.place(x=800,y=650)

def totale2():

n=5

wt=[]

tat=[]

global e1,e2,e3,e4,e5,y1,y2,y3,y4,y5

if(e1.get()==""):

y1=0

else:

y1=int(e1.get())

if(e2.get()==""):

y2=0

else:

y2=int(e2.get())

if(e3.get()==""):

y3=0

else:

y3=int(e3.get())

if(e4.get()==""):

y4=0

else:

y4=int(e4.get())

if(e5.get()==""):

y5=0

else:

y5=int(e5.get())

if(s1.get()==""):

v1=0

else:

v1=int(s1.get())

if(s2.get()==""):

v2=0

else:

v2=int(s2.get())

if(s3.get()==""):

v3=0

else:

v3=int(s3.get())

if(s4.get()==""):

v4=0

else:

v4=int(s4.get())

if(s5.get()==""):

v5=0

else:

v5=int(s5.get())

priority=[]

priority.append(y1)

priority.append(y2)

priority.append(y3)

priority.append(y4)

priority.append(y5)

print(priority)

bt=[]

bt.append(v1)

bt.append(v2)

bt.append(v3)

bt.append(v3)

bt.append(v3)

print(bt)

processes=[]

for i in range(0,n):

processes.insert(i,i+1)

for i in range(0,len(priority)-1):

for j in range(0,len(priority)-i-1):

if(priority[j]>priority[j+1]):

swap=priority[j]

priority[j]=priority[j+1]

priority[j+1]=swap

swap=bt[j]

bt[j]=bt[j+1]

bt[j+1]=swap

swap=processes[j]

processes[j]=processes[j+1]

processes[j+1]=swap

wt.insert(0,0)

tat.insert(0,bt[0])

for i in range(1,len(processes)):

wt.insert(i,wt[i-1]+bt[i-1])

tat.insert(i,wt[i]+bt[i])

avgtat=0

avgwt=0

for i in range(0,len(processes)):

avgwt=avgwt+wt[i]

avgtat=avgtat+tat[i]

avgwt=float(avgwt)/n

avgtat=float(avgtat)/n

print(avgwt)

print(avgtat)

t1=Label(master=window,text=wt[0],bg="tomato",fg="green",font=("helvetica",25,"bold"))

t1.place(x=575,y=155)

t2=Label(master=window,text=wt[1],bg="tomato",fg="green",font=("helvetica",25,"bold"))

t2.place(x=575,y=255)

t3=Label(master=window,text=wt[2],bg="tomato",fg="green",font=("helvetica",25,"bold"))

t3.place(x=575,y=355)

t4=Label(master=window,text=wt[3],bg="tomato",fg="green",font=("helvetica",25,"bold"))

t4.place(x=575,y=455)

t5=Label(master=window,text=wt[4],bg="tomato",fg="green",font=("helvetica",25,"bold"))

t5.place(x=575,y=555)

o1=Label(master=window,text=tat[0],bg="tomato",fg="green",font=("helvetica",25,"bold"))

o1.place(x=775,y=155)

o2=Label(master=window,text=tat[1],bg="tomato",fg="green",font=("helvetica",25,"bold"))

o2.place(x=775,y=255)

o3=Label(master=window,text=tat[2],bg="tomato",fg="green",font=("helvetica",25,"bold"))

o3.place(x=775,y=355)

o4=Label(master=window,text=tat[3],bg="tomato",fg="green",font=("helvetica",25,"bold"))

o4.place(x=775,y=455)

o5=Label(master=window,text=tat[4],bg="tomato",fg="green",font=("helvetica",25,"bold"))

o5.place(x=775,y=555)

awta=Label(master=window,text=avgwt,bg="tomato",fg="green",font=("helvetica",15,"bold"))

awta.place(x=1180,y=300)

tata=Label(master=window,text=avgtat,bg="tomato",fg="green",font=("helvetica",15,"bold"))

tata.place(x=1230,y=400)

total=Button(master=window,text="CALCULATE",bg="white",command=totale2,fg="green",font=("helvetica",15,"bold"))

total.place(x=525,y=650)

def totale():

global avgwt

window=Tk()

window.geometry("1450x800")

window.title("FCFS")

window.configure(bg="tomato")

global e1,e2,e3,e4,e5,y1,y2,y3,y4,y5

n=5

if(e1.get()==""):

y1=0

else:

y1=int(e1.get())

if(e2.get()==""):

y2=0

else:

y2=int(e2.get())

if(e3.get()==""):

y3=0

else:

y3=int(e3.get())

if(e4.get()==""):

y4=0

else:

y4=int(e4.get())

if(e5.get()==""):

y5=0

else:

y5=int(e5.get())

bt=[]

bt.append(y1)

bt.append(y2)

bt.append(y3)

bt.append(y4)

bt.append(y5)

wt=[]

avgwt=0

tat=[]

avgtat=0

wt.insert(0,0)

tat.insert(0,bt[0])

for i in range(1,n):

wt.insert(i,wt[i-1]+bt[i-1])

tat.insert(i,wt[i]+bt[i])

avgwt+=wt[i]

avgwt=float(avgwt)/n

for i in range(0,n):

avgtat+=tat[i]

avgtat=float(avgtat)/n

w1=Label(master=window,text=wt[0],bg="tomato",fg="green",font=("helvetica",25,"bold"))

w1.place(x=375,y=155)

w2=Label(master=window,text=wt[1],bg="tomato",fg="green",font=("helvetica",25,"bold"))

w2.place(x=375,y=255)

w3=Label(master=window,text=wt[2],bg="tomato",fg="green",font=("helvetica",25,"bold"))

w3.place(x=375,y=355)

w4=Label(master=window,text=wt[3],bg="tomato",fg="green",font=("helvetica",25,"bold"))

w4.place(x=375,y=455)

w5=Label(master=window,text=wt[4],bg="tomato",fg="green",font=("helvetica",25,"bold"))

w5.place(x=375,y=555)

t1=Label(master=window,text=tat[0],bg="tomato",fg="green",font=("helvetica",25,"bold"))

t1.place(x=575,y=155)

t2=Label(master=window,text=tat[1],bg="tomato",fg="green",font=("helvetica",25,"bold"))

t2.place(x=575,y=255)

t3=Label(master=window,text=tat[2],bg="tomato",fg="green",font=("helvetica",25,"bold"))

t3.place(x=575,y=355)

t4=Label(master=window,text=tat[3],bg="tomato",fg="green",font=("helvetica",25,"bold"))

t4.place(x=575,y=455)

t5=Label(master=window,text=tat[4],bg="tomato",fg="green",font=("helvetica",25,"bold"))

t5.place(x=575,y=555)

awt=Label(master=window,text="Average waiting time:",bg="tomato",fg="green",font=("helvetica",25,"bold"))

awt.place(x=775,y=300)

awta=Label(master=window,text=avgwt,bg="tomato",fg="green",font=("helvetica",25,"bold"))

awta.place(x=1150,y=300)

tatb=Label(master=window,text="Average turn around time:",bg="tomato",fg="green",font=("helvetica",25,"bold"))

tatb.place(x=775,y=400)

tata=Label(master=window,text=avgtat,bg="tomato",fg="green",font=("helvetica",25,"bold"))

tata.place(x=1200,y=400)

total=Button(master=window,text="CALCULATE",bg="white",command=totale,fg="green",font=("helvetica",15,"bold"))

total.place(x=525,y=650)

title=Label(master=window,text="FCFS",bg="YELLOW",fg="green",font=("helvetica",70,"bold"))

title.place(x=900,y=90)

m1=Label(master=window,text="BURST TIME",bg="tomato",fg="green",font=("helvetica",15,"bold"))

m1.place(x=130,y=80)

m2=Label(master=window,text="WAITING TIME",bg="tomato",fg="green",font=("helvetica",15,"bold"))

m2.place(x=320,y=80)

m3=Label(master=window,text="TURN AROUND TIME",bg="tomato",fg="green",font=("helvetica",15,"bold"))

m3.place(x=500,y=80)

e1=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

e1.place(x=175,y=155)

e2=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

e2.place(x=175,y=255)

e3=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

e3.place(x=175,y=355)

e4=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

e4.place(x=175,y=455)

e5=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

e5.place(x=175,y=555)

e1.insert(END,y1)

e2.insert(END,y2)

e3.insert(END,y3)

e4.insert(END,y4)

e5.insert(END,y5)

l1=Label(master=window,text="PROCESS 1 :",bg="tomato",fg="green",font=("helvetica",15,"bold"))

l1.place(x=20,y=155)

l2=Label(master=window,text="PROCESS 2 :",bg="tomato",fg="green",font=("helvetica",15,"bold"))

l2.place(x=20,y=255)

l3=Label(master=window,text="PROCESS 3 :",bg="tomato",fg="green",font=("helvetica",15,"bold"))

l3.place(x=20,y=355)

l4=Label(master=window,text="PROCESS 4 :",bg="tomato",fg="green",font=("helvetica",15,"bold"))

l4.place(x=20,y=455)

l5=Label(master=window,text="PROCESS 5 :",bg="tomato",fg="green",font=("helvetica",15,"bold"))

l5.place(x=20,y=555)

clear=Button(master=window,text="CLEAR",bg="white",command=clear1,fg="red",font=("helvetica",15,"bold"))

clear.place(x=800,y=650)

vis=Button(master=window,text="VISUALIZATION",bg="white",command=vis1,fg="red",font=("helvetica",15,"bold"))

vis.place(x=1075,y=650)

def fcfsb():

window=Tk()

window.geometry("1450x800")

window.title("FCFS")

window.configure(bg="tomato")

wait=15

global e1,e2,e3,e4,e5,y1,y2,y3,y4,y5

title=Label(master=window,text="FCFS",bg="YELLOW",fg="green",font=("helvetica",70,"bold"))

title.place(x=900,y=90)

m1=Label(master=window,text="BURST TIME",bg="tomato",fg="green",font=("helvetica",15,"bold"))

m1.place(x=130,y=80)

m2=Label(master=window,text="WAITING TIME",bg="tomato",fg="green",font=("helvetica",15,"bold"))

m2.place(x=320,y=80)

m3=Label(master=window,text="TURN AROUND TIME",bg="tomato",fg="green",font=("helvetica",15,"bold"))

m3.place(x=500,y=80)

e1=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

e1.place(x=175,y=155)

e2=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

e2.place(x=175,y=255)

e3=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

e3.place(x=175,y=355)

e4=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

e4.place(x=175,y=455)

e5=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

e5.place(x=175,y=555)

l1=Label(master=window,text="PROCESS 1 :",bg="tomato",fg="green",font=("helvetica",15,"bold"))

l1.place(x=20,y=155)

l2=Label(master=window,text="PROCESS 2 :",bg="tomato",fg="green",font=("helvetica",15,"bold"))

l2.place(x=20,y=255)

l3=Label(master=window,text="PROCESS 3 :",bg="tomato",fg="green",font=("helvetica",15,"bold"))

l3.place(x=20,y=355)

l4=Label(master=window,text="PROCESS 4 :",bg="tomato",fg="green",font=("helvetica",15,"bold"))

l4.place(x=20,y=455)

l5=Label(master=window,text="PROCESS 5 :",bg="tomato",fg="green",font=("helvetica",15,"bold"))

l5.place(x=20,y=555)

w1=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

w1.place(x=375,y=155)

w2=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

w2.place(x=375,y=255)

w3=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

w3.place(x=375,y=355)

w4=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

w4.place(x=375,y=455)

w5=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

w5.place(x=375,y=555)

t1=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

t1.place(x=575,y=155)

t2=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

t2.place(x=575,y=255)

t3=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

t3.place(x=575,y=355)

t4=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

t4.place(x=575,y=455)

t5=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

t5.place(x=575,y=555)

awt=Label(master=window,text="Average waiting time:",bg="tomato",fg="green",font=("helvetica",25,"bold"))

awt.place(x=775,y=300)

awta=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

awta.place(x=1150,y=300)

tatb=Label(master=window,text="Average turn around time:",bg="tomato",fg="green",font=("helvetica",25,"bold"))

tatb.place(x=775,y=400)

tata=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

tata.place(x=1200,y=400)

total=Button(master=window,text="CALCULATE",bg="white",command=totale,fg="green",font=("helvetica",15,"bold"))

total.place(x=525,y=650)

clear=Button(master=window,text="CLEAR",bg="white",command=clear1,fg="red",font=("helvetica",15,"bold"))

clear.place(x=800,y=650)

def sjfa():

window=Tk()

window.geometry("2000x2000")

window.title("SJF")

window.configure(bg="tomato")

global e1,e2,e3,e4,e5,y1,y2,y3,y4,y5,l1,l2,l3,l4,l5

title=Label(master=window,text="SJF",bg="YELLOW",fg="green",font=("helvetica",70,"bold"))

title.place(x=1000,y=90)

m0=Label(master=window,text="BRUST TIME",bg="tomato",fg="green",font=("helvetica",15,"bold"))

m0.place(x=20,y=80)

m1=Label(master=window,text="PROCESSES",bg="tomato",fg="green",font=("helvetica",15,"bold"))

m1.place(x=170,y=80)

m2=Label(master=window,text="NEW TIME",bg="tomato",fg="green",font=("helvetica",15,"bold"))

m2.place(x=320,y=80)

m3=Label(master=window,text="WAITING TIME",bg="tomato",fg="green",font=("helvetica",15,"bold"))

m3.place(x=500,y=80)

m4=Label(master=window,text="TURN AROUND TIME",bg="tomato",fg="green",font=("helvetica",15,"bold"))

m4.place(x=700,y=80)

e1=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

e1.place(x=50,y=155)

e2=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

e2.place(x=50,y=255)

e3=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

e3.place(x=50,y=355)

e4=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

e4.place(x=50,y=455)

e5=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

e5.place(x=50,y=555)

l1=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

l1.place(x=200,y=155)

l2=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

l2.place(x=200,y=255)

l3=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

l3.place(x=200,y=355)

l4=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

l4.place(x=200,y=455)

l5=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

l5.place(x=200,y=555)

q1=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

q1.place(x=375,y=155)

q2=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

q2.place(x=375,y=255)

q3=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

q3.place(x=375,y=355)

q4=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

q4.place(x=375,y=455)

q5=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

q5.place(x=375,y=555)

w1=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

w1.place(x=575,y=155)

w2=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

w2.place(x=575,y=255)

w3=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

w3.place(x=575,y=355)

w4=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

w4.place(x=575,y=455)

w5=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

w5.place(x=575,y=555)

t1=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

t1.place(x=775,y=155)

t2=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

t2.place(x=775,y=255)

t3=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

t3.place(x=775,y=355)

t4=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

t4.place(x=775,y=455)

t5=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

t5.place(x=775,y=555)

awt=Label(master=window,text="Average waiting time:",bg="tomato",fg="green",font=("helvetica",20,"bold"))

awt.place(x=890,y=300)

awta=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",20,"bold"))

awta.place(x=1190,y=300)

tatb=Label(master=window,text="Average turn around time:",bg="tomato",fg="green",font=("helvetica",20,"bold"))

tatb.place(x=890,y=400)

tata=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",20,"bold"))

tata.place(x=1250,y=400)

total=Button(master=window,text="CALCULATE",bg="white",command=totale1,fg="green",font=("helvetica",15,"bold"))

total.place(x=525,y=650)

clear=Button(master=window,text="CLEAR",bg="white",command=clear1,fg="red",font=("helvetica",15,"bold"))

clear.place(x=800,y=650)

def pri():

window=Tk()

window.geometry("1450x800")

window.title("Priority")

window.configure(bg="tomato")

wait=15

global e1,e2,e3,e4,e5,s1,s2,s3,s4,s5,v1,v2,v3,v4,v5,y1,y2,y3,y4,y5

m0=Label(master=window,text="PRIORITY",bg="tomato",fg="green",font=("helvetica",15,"bold"))

m0.place(x=150,y=80)

title=Label(master=window,text="PRIORITY",bg="YELLOW",fg="green",font=("helvetica",40,"bold"))

title.place(x=1000,y=90)

m1=Label(master=window,text="BURST TIME",bg="tomato",fg="green",font=("helvetica",15,"bold"))

m1.place(x=320,y=80)

m2=Label(master=window,text="WAITING TIME",bg="tomato",fg="green",font=("helvetica",15,"bold"))

m2.place(x=500,y=80)

m3=Label(master=window,text="TURN AROUND TIME",bg="tomato",fg="green",font=("helvetica",15,"bold"))

m3.place(x=700,y=80)

#priority

e1=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

e1.place(x=175,y=155)

e2=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

e2.place(x=175,y=255)

e3=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

e3.place(x=175,y=355)

e4=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

e4.place(x=175,y=455)

e5=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

e5.place(x=175,y=555)

#BT

s1=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

s1.place(x=375,y=155)

s2=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

s2.place(x=375,y=255)

s3=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

s3.place(x=375,y=355)

s4=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

s4.place(x=375,y=455)

s5=Entry(master=window,width=3,font=("Calibri",20),justify='center',relief="solid",bg="white")

s5.place(x=375,y=555)

l1=Label(master=window,text="PROCESS 1 :",bg="tomato",fg="green",font=("helvetica",15,"bold"))

l1.place(x=20,y=155)

l2=Label(master=window,text="PROCESS 2 :",bg="tomato",fg="green",font=("helvetica",15,"bold"))

l2.place(x=20,y=255)

l3=Label(master=window,text="PROCESS 3 :",bg="tomato",fg="green",font=("helvetica",15,"bold"))

l3.place(x=20,y=355)

l4=Label(master=window,text="PROCESS 4 :",bg="tomato",fg="green",font=("helvetica",15,"bold"))

l4.place(x=20,y=455)

l5=Label(master=window,text="PROCESS 5 :",bg="tomato",fg="green",font=("helvetica",15,"bold"))

l5.place(x=20,y=555)

t1=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

t1.place(x=575,y=155)

t2=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

t2.place(x=575,y=255)

t3=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

t3.place(x=575,y=355)

t4=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

t4.place(x=575,y=455)

t5=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

t5.place(x=575,y=555)

o1=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

o1.place(x=775,y=155)

o2=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

o2.place(x=775,y=255)

o3=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

o3.place(x=775,y=355)

o4=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

o4.place(x=775,y=455)

o5=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",25,"bold"))

o5.place(x=775,y=555)

awt=Label(master=window,text="Average waiting time:",bg="tomato",fg="green",font=("helvetica",15,"bold"))

awt.place(x=975,y=300)

awta=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",15,"bold"))

awta.place(x=1180,y=300)

tatb=Label(master=window,text="Average turn around time:",bg="tomato",fg="green",font=("helvetica",15,"bold"))

tatb.place(x=975,y=400)

tata=Label(master=window,text="0",bg="tomato",fg="green",font=("helvetica",15,"bold"))

tata.place(x=1230,y=400)

total=Button(master=window,text="CALCULATE",bg="white",command=totale3,fg="green",font=("helvetica",15,"bold"))

total.place(x=525,y=650)

clear=Button(master=window,text="CLEAR",bg="white",command=clear2,fg="red",font=("helvetica",15,"bold"))

clear.place(x=800,y=650)

tk.mainloop()

def start():

btnstart.destroy()

labelimage.destroy()

fcfsa()

def fcfsa():

fcfs = Button(root, text = 'FCFS',relief = FLAT,

border = 0,font=("helvetica",40,"bold"),command = fcfsb )

fcfs.place(x =100,y=500)

sjf = Button(root, text = 'SJF',relief = FLAT,

border = 0,font=("helvetica",40,"bold"),command=sjfa)

sjf.place(x =440,y=500)

priority= Button(root, text = 'PRIORITY',relief = FLAT,

border = 0,font=("helvetica",40,"bold"),command=pri)

priority.place(x =670,y=500)

root.mainloop()

img1 = PhotoImage(file="title (1).png")

labelimage = Label(

root,

image = img1,

background = "tomato"

)

labelimage.pack(pady=(40,0))

img2 = PhotoImage(file="Frame.png")

btnstart = Button(root,command = start,image = img2,

relief = FLAT,

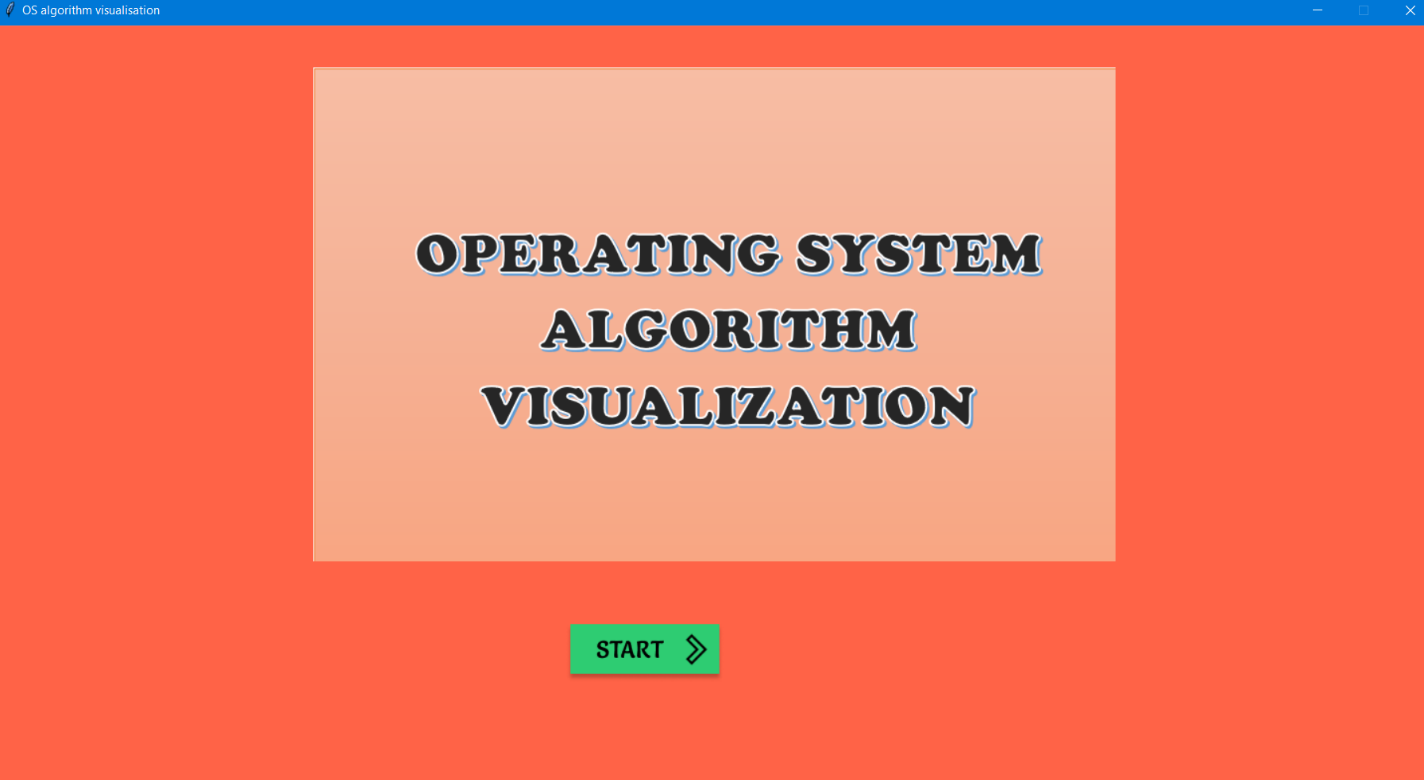
border = 0,

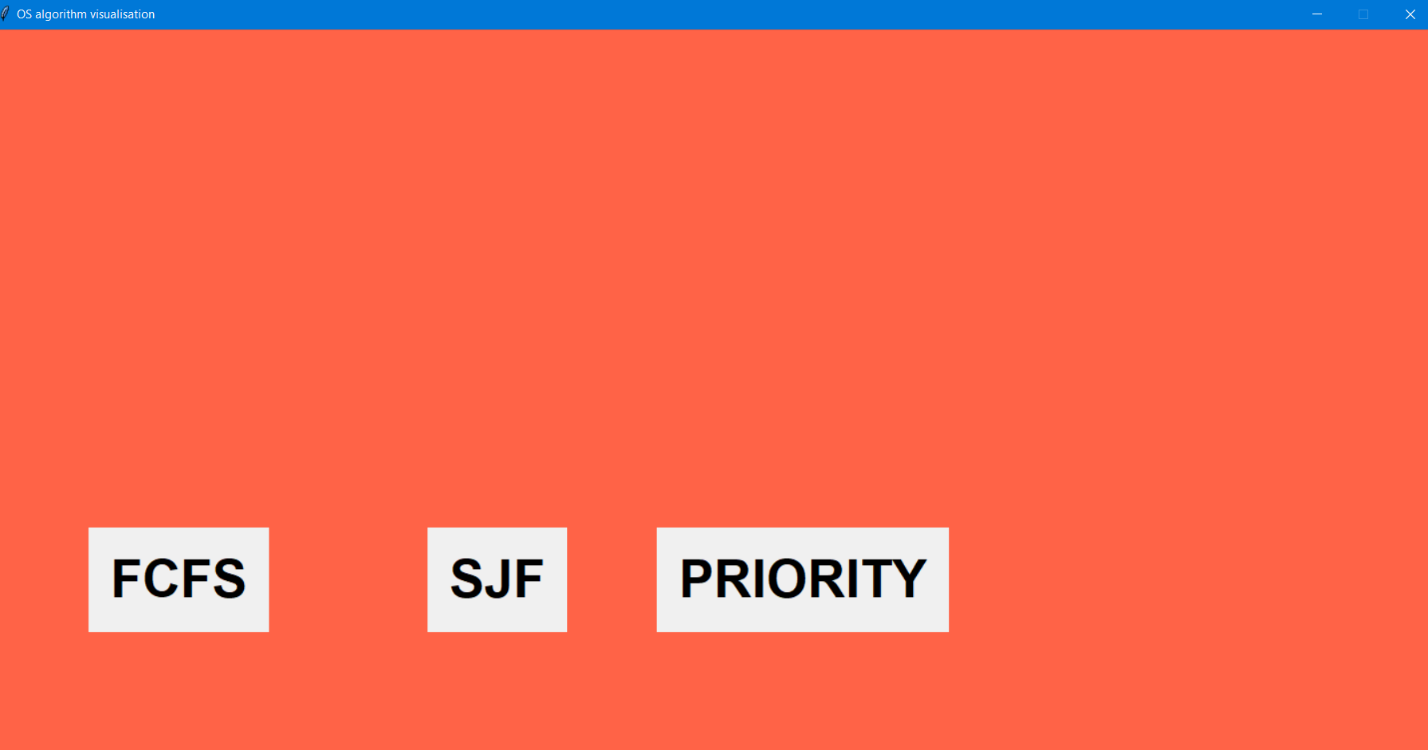
background = 'tomato')

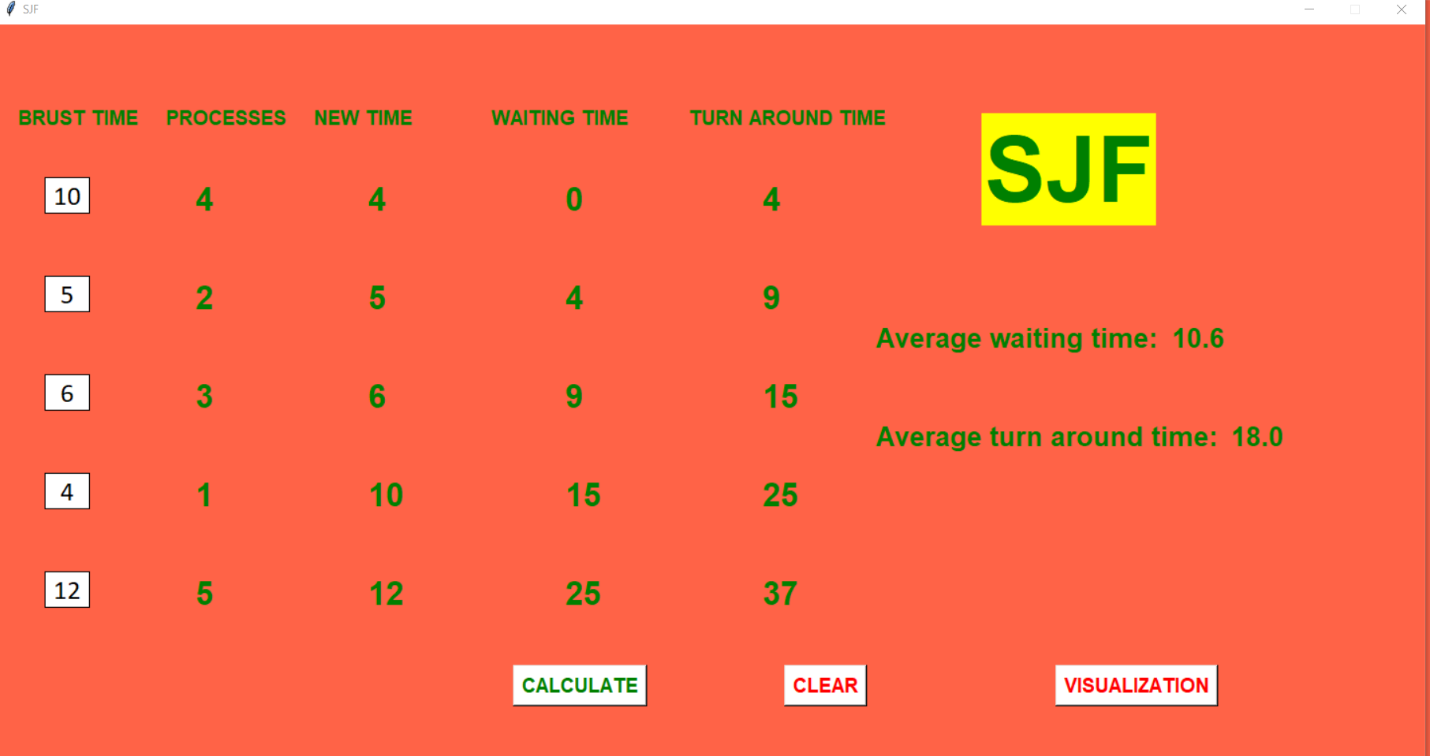
btnstart.place(x=575,y=600)

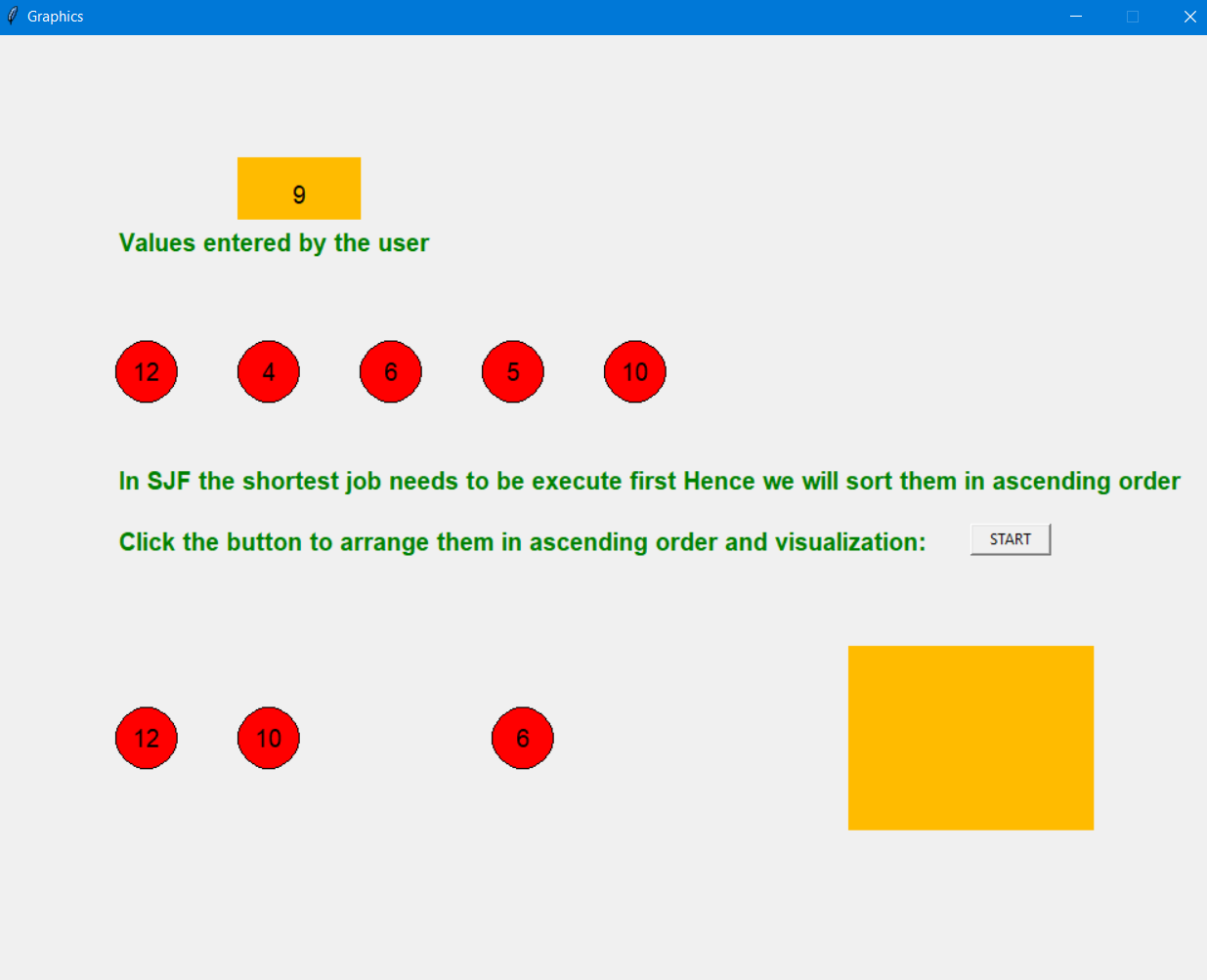
root.mainloop()

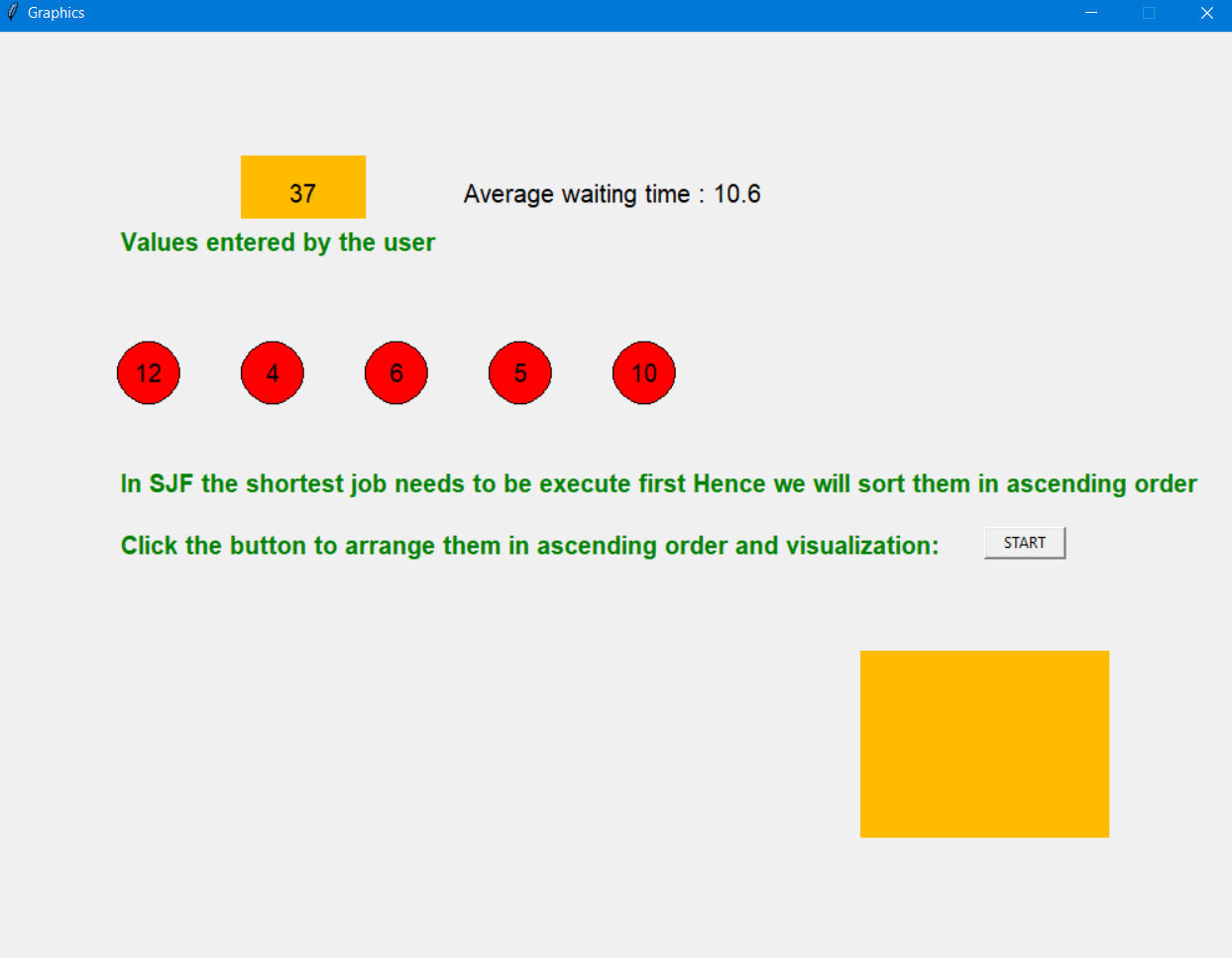
**Output:-**

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