Actividad 05 (Clases y Objetos).

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Seminario de Algoritmia I

Lineamientos de evaluación

[X] El reporte está en formato Google Docs o PDF.

- [X] El reporte sigue las pautas del Formato de Actividades .
- [X] El reporte tiene desarrollada todas las pautas del Formato de Actividades.
- [X] Se muestra la captura de pantalla de los datos antes de usar el método agregar_inicio() y la captura de pantalla del método mostrar() después de haber utilizado el método agregar_inicio().
- [X] Se muestra la captura de pantalla de los datos antes de usar el método agregar_final() y la captura de pantalla del método mostrar() después de haber utilizado el método agregar_final().

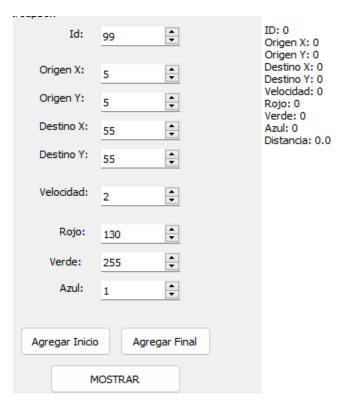
Desarrollo

Agregar al inicio.

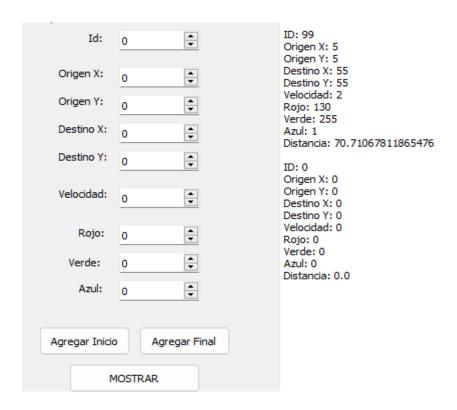
Para demostrar la función agregar al inicio de la lista, se ingresó una partícula con valor de 0 en todos sus campos.

GroupBox		
Id:	0	ID: 0 Origen X: 0 Origen Y: 0
Origen X:	0	Destino X: 0 Destino Y: 0 Velocidad: 0 Rojo: 0 Verde: 0 Azul: 0 Distancia: 0.0
Origen Y:	0	
Destino X:	0	
Destino Y:	0	
Velocidad:	0	
Rojo:	0	
Verde:	0	
Azul:	0	
Agregar Inicio	Agregar Final	

Después ingresamos los una partícula con el ID 99, la siguiente imagen demuestra los parámetro antes de que se ingresen con el método agregar al inicio.



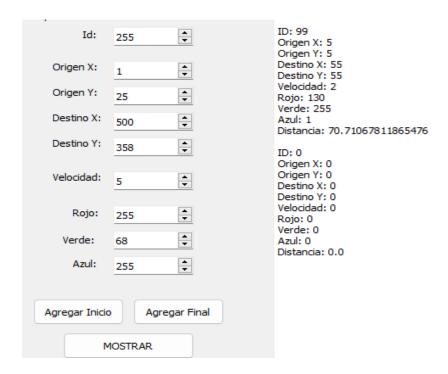
En la siguiente imagen se muestra el resultado al imprimir ahora los resultados de nuestra lista de partículas.



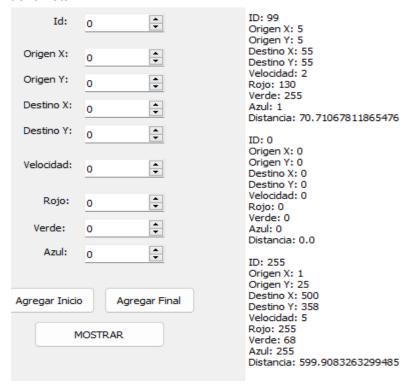
Agregar al final.

Para demostrar la función agregar al final de la lista, se tienen las partículas ingresadas en los puntos anteriores.

Se ingresará una nueva partícula con el ID 255, en la siguiente imagen se muestran los datos de la partícula.



En la siguiente imagen se puede apreciar el resultado de ingresar la partícula al final de la lista.



Conclusiones

El mayor inconveniente en esta práctica fue que me confundí en la parte de sacar los valores de los spinBox de QT, ya que los estaba obteniendo como **text()** esto me causaba problemas se soluciono al cambiar al parámetro **value()**. Ejemplo:

```
Linea mal escrita para este caso.
id = self.ui.id_spinBox.text()

Linea correcta para este caso:
id = self.ui.id_spinBox.value()
```

Referencias

```
Autor: Michel Dávalos.
```

PySide2 - Clases y Objetos (Qt for Python)(I)

https://www.youtube.com/watch?v=T0gJdF1fMgo&feature=youtu.be

PySide2 - Clases y Objetos (Qt for Python)(II) https://www.youtube.com/watch?v=KfQDtrrL2OU

PySide2 - Clases y Objetos (Qt for Python)(III)

https://www.youtube.com/watch?v=5TPKrKIAAU0

Código

app.py

```
from PySide2.QtWidgets import QApplication
from mainWindow import MainWindow
import sys

app = QApplication()
myWindow = MainWindow()
myWindow.show()

sys.exit(app.exec_())
```

algorithms.py

```
import math

def euclidean_distance(x_1, y_1, x_2, y_2)->float:
    euclidean_Distance = math.sqrt(((x_2-x_1)**2) + ((y_2-y_1)**2))
    return euclidean_Distance
```

particle.py

```
from algorithms import euclidean distance
class Particle:
   def init (self,id, ori X=0, ori Y=0, dest X=0, dest Y=0,
speed=0, R=0, G=0, B=0):
       self. id = id
       self.__origen_x = ori X
       self.__origen_y = ori_Y
       self.__velocidad = speed
       self. green = G
dest Y)
            '\nID: ' + str(self. id) +
            '\nOrigen X: ' + str(self. origen x) +
            '\nOrigen Y: ' + str(self. origen y) +
            '\nVelocidad: ' + str(self. velocidad) +
            '\nVerde: ' + str(self. green) +
            '\nAzul: ' + str(self. blue) +
            '\nDistancia: ' + str(self. distancia) +
```

particle_list.py

```
from particle import Particle

class Particle_List:
   def __init__(self):
     self.__Particles = []
```

```
def addToEnd(self, part:Particle):
    self.__Particles.append(part)

def addFirst(self, part:Particle):
    self.__Particles.insert(0, part)

def showAll(self):
    for part in self.__Particles:
        print(part)

def __str__(self):
    return "".join(
        str(particle) for particle in self.__Particles
    )
```

mainWindow.py

```
from PySide2.QtWidgets import QMainWindow
from ui mainWindow import Ui MainWindow
from particle import Particle
from particle list import Particle List
class MainWindow(QMainWindow):
       self.particle list = Particle List()
       self.ui = Ui MainWindow()
       self.ui.setupUi(self)
self.ui.addToStart pushButton.clicked.connect(self.click addStart)
        self.ui.addEnd pushButton.clicked.connect(self.click addEnd)
self.ui.showListParticle_pushButton.clicked.connect(self.click_show)
   def click_addStart(self):
       self.particle list.addFirst(self.make particle())
       self.reset spinBoxs()
   def click addEnd(self):
       self.particle list.addToEnd(self.make particle())
        self.reset spinBoxs()
```

```
def click show(self):
        self.ui.particle PlainText.clear()
self.ui.particle PlainText.insertPlainText(str(self.particle list))
    def make particle(self)->Particle:
        id = self.ui.id spinBox.value()
        x1 = self.ui.originX spinBox.value()
        y1 = self.ui.originY spinBox.value()
        x2 = self.ui.destX spinBox.value()
        y2 = self.ui.destY spinBox.value()
        speed = self.ui.speed spinBox.value()
        red = self.ui.red spinBox.value()
        green = self.ui.green spinBox.value()
        blue = self.ui.blue spinBox.value()
        myParticle = Particle(id, x1, y1, x2, y2, speed, red, green,
blue)
        return myParticle
    def reset spinBoxs(self):
        self.ui.id spinBox.setValue(0)
        self.ui.originX spinBox.setValue(0)
        self.ui.originY spinBox.setValue(0)
        self.ui.destX spinBox.setValue(0)
        self.ui.destY spinBox.setValue(0)
        self.ui.speed spinBox.setValue(0)
        self.ui.red spinBox.setValue(0)
        self.ui.green spinBox.setValue(0)
        self.ui.blue spinBox.setValue(0)
```

ui_mainWindow.py

```
#########
from PySide2.QtCore import *
from PySide2.QtGui import *
from PySide2.QtWidgets import *
class Ui MainWindow(object):
   def setupUi(self, MainWindow):
        if not MainWindow.objectName():
            MainWindow.setObjectName(u"MainWindow")
        MainWindow.resize(638, 620)
        self.centralwidget = QWidget(MainWindow)
        self.centralwidget.setObjectName(u"centralwidget")
        self.horizontalLayout = QHBoxLayout(self.centralwidget)
        self.horizontalLayout.setObjectName(u"horizontalLayout")
        self.groupBox = QGroupBox(self.centralwidget)
        self.groupBox.setObjectName(u"groupBox")
        self.label = QLabel(self.groupBox)
        self.label.setObjectName(u"label")
        self.label.setGeometry(QRect(40, 120, 47, 13))
        self.label 2 = QLabel(self.groupBox)
        self.label 2.setObjectName(u"label 2")
        self.label 2.setGeometry(QRect(40, 150, 47, 13))
        self.label 3 = QLabel(self.groupBox)
        self.label 3.setObjectName(u"label 3")
        self.label 3.setGeometry(QRect(40, 190, 47, 13))
        self.label 4 = QLabel(self.groupBox)
        self.label 4.setObjectName(u"label 4")
        self.label 4.setGeometry(QRect(60, 230, 31, 16))
        self.label 5 = QLabel(self.groupBox)
        self.label 5.setObjectName(u"label 5")
        self.label 5.setGeometry(QRect(50, 260, 41, 20))
        self.label 6 = QLabel(self.groupBox)
        self.label 6.setObjectName(u"label 6")
        self.label 6.setGeometry(QRect(60, 290, 31, 16))
        self.destX spinBox = QSpinBox(self.groupBox)
        self.destX spinBox.setObjectName(u"destX spinBox")
        self.destX spinBox.setGeometry(QRect(100, 120, 81, 22))
        self.destX spinBox.setMaximum(500)
        self.destY spinBox = QSpinBox(self.groupBox)
        self.destY spinBox.setObjectName(u"destY spinBox")
```

```
self.destY spinBox.setGeometry(QRect(100, 150, 81, 22))
        self.destY spinBox.setMaximum(500)
        self.speed spinBox = QSpinBox(self.groupBox)
       self.speed spinBox.setObjectName(u"speed spinBox")
       self.speed spinBox.setGeometry(QRect(100, 190, 81, 22))
       self.speed spinBox.setMaximum(99999)
       self.red spinBox = QSpinBox(self.groupBox)
        self.red spinBox.setObjectName(u"red spinBox")
        self.red spinBox.setGeometry(QRect(100, 230, 81, 22))
       self.red spinBox.setMaximum(255)
       self.green spinBox = QSpinBox(self.groupBox)
       self.green spinBox.setObjectName(u"green spinBox")
       self.green spinBox.setGeometry(QRect(100, 260, 81, 22))
       self.green spinBox.setMaximum(255)
       self.blue spinBox = QSpinBox(self.groupBox)
        self.blue spinBox.setObjectName(u"blue spinBox")
        self.blue spinBox.setGeometry(QRect(100, 290, 81, 22))
       self.blue spinBox.setMaximum(255)
       self.particle PlainText = QPlainTextEdit(self.groupBox)
       self.particle PlainText.setObjectName(u"particle PlainText")
       self.particle PlainText.setGeometry(QRect(260, 0, 321, 531))
        self.addToStart pushButton = QPushButton(self.groupBox)
self.addToStart pushButton.setObjectName(u"addToStart pushButton")
        self.addToStart pushButton.setGeometry(QRect(20, 340, 91, 31))
        self.addEnd pushButton = QPushButton(self.groupBox)
       self.addEnd pushButton.setObjectName(u"addEnd pushButton")
       self.addEnd pushButton.setGeometry(QRect(120, 340, 91, 31))
        self.showListParticle pushButton = QPushButton(self.groupBox)
self.showListParticle_pushButton.setObjectName(u"showListParticle_pushB
utton")
       self.showListParticle pushButton.setGeometry(QRect(50, 380,
131, 31))
        self.originX label = QLabel(self.groupBox)
       self.originX label.setObjectName(u"originX label")
       self.originX label.setGeometry(QRect(40, 60, 47, 13))
       self.originY_label = QLabel(self.groupBox)
       self.originY label.setObjectName(u"originY label")
       self.originY label.setGeometry(QRect(40, 90, 47, 13))
        self.originY spinBox = QSpinBox(self.groupBox)
       self.originY spinBox.setObjectName(u"originY spinBox")
       self.originY spinBox.setGeometry(QRect(100, 90, 81, 22))
```

```
self.originY spinBox.setMaximum(500)
        self.originX spinBox = QSpinBox(self.groupBox)
        self.originX spinBox.setObjectName(u"originX spinBox")
        self.originX spinBox.setGeometry(QRect(100, 60, 81, 22))
        self.originX spinBox.setMaximum(500)
        self.originX label 2 = QLabel(self.groupBox)
        self.originX_label_2.setObjectName(u"originX_label_2")
        self.originX label 2.setGeometry(QRect(70, 20, 21, 16))
        self.id spinBox = QSpinBox(self.groupBox)
        self.id spinBox.setObjectName(u"id spinBox")
        self.id spinBox.setGeometry(QRect(100, 20, 81, 22))
        self.id spinBox.setMaximum(500)
        self.horizontalLayout.addWidget(self.groupBox)
       MainWindow.setCentralWidget(self.centralwidget)
        self.menubar = QMenuBar(MainWindow)
        self.menubar.setObjectName(u"menubar")
       self.menubar.setGeometry(QRect(0, 0, 638, 21))
       MainWindow.setMenuBar(self.menubar)
       self.statusbar = QStatusBar(MainWindow)
       self.statusbar.setObjectName(u"statusbar")
       MainWindow.setStatusBar(self.statusbar)
        self.retranslateUi(MainWindow)
       QMetaObject.connectSlotsByName(MainWindow)
   def retranslateUi(self, MainWindow):
MainWindow.setWindowTitle(QCoreApplication.translate("MainWindow",
        self.groupBox.setTitle(QCoreApplication.translate("MainWindow",
       self.label.setText(QCoreApplication.translate("MainWindow",
u"Destino X:", None))
        self.label 2.setText(QCoreApplication.translate("MainWindow",
u"Destino Y:", None))
        self.label 3.setText(QCoreApplication.translate("MainWindow",
"Velocidad:", None))
        self.label 4.setText(QCoreApplication.translate("MainWindow",
```

```
self.label 5.setText(QCoreApplication.translate("MainWindow",
u"Verde:", None))
        self.label 6.setText(QCoreApplication.translate("MainWindow",
u"Azul:", None))
self.addToStart pushButton.setText(QCoreApplication.translate("MainWind
ow", u"Agregar Inicio", None))
self.addEnd pushButton.setText(QCoreApplication.translate("MainWindow",
u"Agregar Final", None))
self.showListParticle    pushButton.setText(QCoreApplication.translate("Ma
inWindow", u"MOSTRAR", None))
self.originX label.setText(QCoreApplication.translate("MainWindow",
u"Origen X:", None))
self.originY label.setText(QCoreApplication.translate("MainWindow",
u"Origen Y:", None))
self.originX label 2.setText(QCoreApplication.translate("MainWindow",
u"Id:", None))
```

mainWindow.ui

```
<widget class="QWidget" name="centralwidget">
     <string>GroupBox</string>
       < x > 40 < /x >
       < y > 120 < /y >
       <height>13</height>
      <string>Destino X:</string>
       < x > 40 < /x >
       < y > 150 < / y >
       <width>47</width>
       <height>13</height>
      <string>Destino Y:</string>
       < x > 40 < /x >
       < y > 190 < /y >
       <width>47</width>
       <height>13</height>
```

```
property name="text">
 < x > 60 < /x >
 < y > 230 < / y >
 <height>16</height>
<string>Rojo:</string>
 < x > 50 < /x >
 < y > 260 < / y >
 <width>41</width>
<string>Verde:</string>
 < x > 60 < / x >
 < y > 290 < / y >
 <width>31</width>
 <height>16</height>
<string>Azul:</string>
```

```
<widget class="QSpinBox" name="destX spinBox">
  <x>100</x>
  < y > 120 < /y >
 <number>500</number>
  < x > 100 < /x >
  < y > 150 < / y >
  <width>81</width>
 <number>500</number>
  < x > 100 < /x >
  < y > 190 < / y >
  <width>81</width>
 <number>99999</number>
  < x > 100 < /x >
```

```
<y>230</y>
<number>255</number>
 < x > 100 < /x >
 <width>81</width>
<number>255</number>
< x > 100 < /x >
 < y > 290 < / y >
 <width>81</width>
 < x > 260 < /x >
 <width>321</width>
 <height>531</height>
```

```
< x > 20 < /x >
 < y > 340 < / y >
 <width>91</width>
<string>Agregar Inicio</string>
 < x > 120 < /x >
 < y > 340 < / y >
 <width>91</width>
<string>Agregar Final</string>
 < x > 50 < /x >
 < y > 380 < / y >
 <width>131</width>
```

```
< x > 40 < /x >
 <height>13</height>
<string>Origen X:</string>
 < x > 40 < /x >
 < y > 90 < / y >
 <width>47</width>
<string>Origen Y:</string>
 < x > 100 < /x >
<number>500</number>
 <x>100</x>
 < y > 60 < / y >
```

```
<height>22</height>
   <number>500</number>
    < x > 70 < /x >
    < y > 20 < / y >
    <width>21</width>
    < x > 100 < /x >
   <number>500</number>
< x > 0 < /x >
<width>638</width>
```