# Actividad 06 (QPlainTextEdit)

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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 botón para agregar_inicio() y la captura de pantalla del mostrar partículas en el QPlainTextEdit después de haber agregado la Particula.
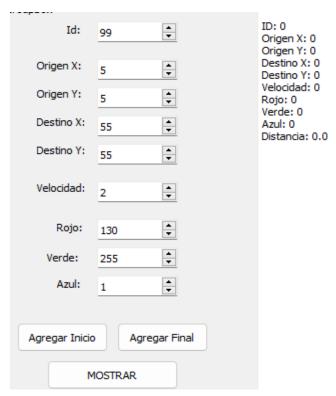    -

# 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.

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.
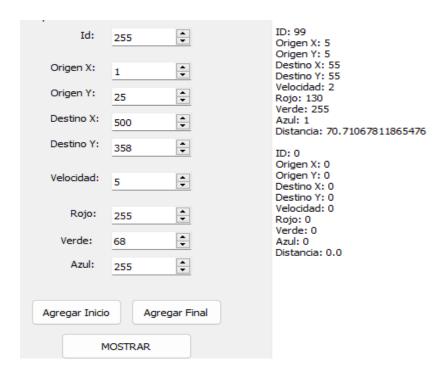


En la siguiente imagen se muestra el resultado al imprimir ahora los resultados de nuestra lista de partículas.



**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.

Id: 255

Origen X: 1

Origen Y: 25

Destino X: 500

Destino Y: 358

Velocidad: 5

Rojo: 255

Verde: 68

Azul: 255

Agregar Inicio     Agregar Final

MOSTRAR

ID: 99
Origen X: 5
Origen Y: 5
Destino X: 55
Destino Y: 55
Velocidad: 2
Rojo: 130
Verde: 255
Azul: 1
Distancia: 70.71067811865476

ID: 0
Origen X: 0
Origen Y: 0
Destino X: 0
Destino Y: 0
Velocidad: 0
Rojo: 0
Verde: 0
Azul: 0
Distancia: 0.0

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

Id: 0

Origen X: 0

Origen Y: 0

Destino X: 0

Destino Y: 0

Velocidad: 0

Rojo: 0

Verde: 0

Azul: 0

Agregar Inicio     Agregar Final

MOSTRAR

ID: 99
Origen X: 5
Origen Y: 5
Destino X: 55
Destino Y: 55
Velocidad: 2
Rojo: 130
Verde: 255
Azul: 1
Distancia: 70.71067811865476

ID: 0
Origen X: 0
Origen Y: 0
Destino X: 0
Destino Y: 0
Velocidad: 0
Rojo: 0
Verde: 0
Azul: 0
Distancia: 0.0

ID: 255
Origen X: 1
Origen Y: 25
Destino X: 500
Destino Y: 358
Velocidad: 5
Rojo: 255
Verde: 68
Azul: 255
Distancia: 599.9083263299485

# 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:

Línea mal escrita para este caso.

```
id = self.ui.id_spinBox.text()
```

Línea 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=T0qJdF1fMqo&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=5TPKrKlAAU0

# Código

## app.py

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

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

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

## algorithms.py

```python
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

```python
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.__destino_x = dest_X
        self.__destino_y = dest_Y
        self.__velocidad = speed
        self.__red = R
        self.__green = G
        self.__blue = B
        self.__distancia = euclidean_distance(ori_X, ori_Y, dest_X,
dest_Y)

    def __str__(self) -> str:
        return(
            '\nID: ' + str(self.__id) +
            '\nOrigen X: ' + str(self.__origen_x) +
            '\nOrigen Y: ' + str(self.__origen_y) +
            '\nDestino X: ' + str(self.__destino_x) +
            '\nDestino Y: ' + str(self.__destino_y) +
            '\nVelocidad: ' + str(self.__velocidad) +
            '\nRojo: ' + str(self.__red) +
            '\nVerde: ' + str(self.__green) +
            '\nAzul: ' + str(self.__blue) +
            '\nDistancia: ' + str(self.__distancia) +
            '\n'
        )
```

## particle_list.py

```python
from particle import Particle


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


    def addToEnd(self, part:Particle):
```

```python
        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**
```python
from PySide2.QtWidgets import QMainWindow
from ui_mainWindow import Ui_MainWindow
from particle import Particle
from particle_list import  Particle_List

class MainWindow(QMainWindow):
    def __init__(self) -> None:
        super(MainWindow, self).__init__()
        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()
```

```python
        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

```python
# -*- coding: utf-8 -*-

################################################################################
#########
## Form generated from reading UI file 'mainWindow.ui'
##
## Created by: Qt User Interface Compiler version 5.15.2
##
## WARNING! All changes made in this file will be lost when recompiling
UI file!
################################################################################
#########
```

```python
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)
```

```python
        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)
```

```python
        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)
    # setupUi

    def retranslateUi(self, MainWindow):
        MainWindow.setWindowTitle(QCoreApplication.translate("MainWindow",
u"MainWindow", None))
        self.groupBox.setTitle(QCoreApplication.translate("MainWindow",
u"GroupBox", None))
        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",
u"Velocidad:", None))
        self.label_4.setText(QCoreApplication.translate("MainWindow",
u"Rojo:", None))
        self.label_5.setText(QCoreApplication.translate("MainWindow",
u"Verde:", None))
```

```python
        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))
    # retranslateUi
```

## mainWindow.ui

```xml
<?xml version="1.0" encoding="UTF-8"?>
<ui version="4.0">
 <class>MainWindow</class>
 <widget class="QMainWindow" name="MainWindow">
  <property name="geometry">
   <rect>
    <x>0</x>
    <y>0</y>
    <width>638</width>
    <height>620</height>
   </rect>
  </property>
  <property name="windowTitle">
   <string>MainWindow</string>
  </property>
  <widget class="QWidget" name="centralwidget">
```

```xml
<layout class="QHBoxLayout" name="horizontalLayout">
 <item>
  <widget class="QGroupBox" name="groupBox">
   <property name="title">
    <string>GroupBox</string>
   </property>
   <widget class="QLabel" name="label">
    <property name="geometry">
     <rect>
      <x>40</x>
      <y>120</y>
      <width>47</width>
      <height>13</height>
     </rect>
    </property>
    <property name="text">
     <string>Destino X:</string>
    </property>
   </widget>
   <widget class="QLabel" name="label_2">
    <property name="geometry">
     <rect>
      <x>40</x>
      <y>150</y>
      <width>47</width>
      <height>13</height>
     </rect>
    </property>
    <property name="text">
     <string>Destino Y:</string>
    </property>
   </widget>
   <widget class="QLabel" name="label_3">
    <property name="geometry">
     <rect>
      <x>40</x>
      <y>190</y>
      <width>47</width>
      <height>13</height>
     </rect>
    </property>
    <property name="text">
     <string>Velocidad:</string>
```

```xml
        </property>
      </widget>
      <widget class="QLabel" name="label_4">
       <property name="geometry">
        <rect>
         <x>60</x>
         <y>230</y>
         <width>31</width>
         <height>16</height>
        </rect>
       </property>
       <property name="text">
        <string>Rojo:</string>
       </property>
      </widget>
      <widget class="QLabel" name="label_5">
       <property name="geometry">
        <rect>
         <x>50</x>
         <y>260</y>
         <width>41</width>
         <height>20</height>
        </rect>
       </property>
       <property name="text">
        <string>Verde:</string>
       </property>
      </widget>
      <widget class="QLabel" name="label_6">
       <property name="geometry">
        <rect>
         <x>60</x>
         <y>290</y>
         <width>31</width>
         <height>16</height>
        </rect>
       </property>
       <property name="text">
        <string>Azul:</string>
       </property>
      </widget>
      <widget class="QSpinBox" name="destX_spinBox">
       <property name="geometry">
```

```xml
   <rect>
    <x>100</x>
    <y>120</y>
    <width>81</width>
    <height>22</height>
   </rect>
  </property>
  <property name="maximum">
   <number>500</number>
  </property>
 </widget>
 <widget class="QSpinBox" name="destY_spinBox">
  <property name="geometry">
   <rect>
    <x>100</x>
    <y>150</y>
    <width>81</width>
    <height>22</height>
   </rect>
  </property>
  <property name="maximum">
   <number>500</number>
  </property>
 </widget>
 <widget class="QSpinBox" name="speed_spinBox">
  <property name="geometry">
   <rect>
    <x>100</x>
    <y>190</y>
    <width>81</width>
    <height>22</height>
   </rect>
  </property>
  <property name="maximum">
   <number>99999</number>
  </property>
 </widget>
 <widget class="QSpinBox" name="red_spinBox">
  <property name="geometry">
   <rect>
    <x>100</x>
    <y>230</y>
    <width>81</width>
```

```xml
      <height>22</height>
     </rect>
    </property>
    <property name="maximum">
     <number>255</number>
    </property>
   </widget>
   <widget class="QSpinBox" name="green_spinBox">
    <property name="geometry">
     <rect>
      <x>100</x>
      <y>260</y>
      <width>81</width>
      <height>22</height>
     </rect>
    </property>
    <property name="maximum">
     <number>255</number>
    </property>
   </widget>
   <widget class="QSpinBox" name="blue_spinBox">
    <property name="geometry">
     <rect>
      <x>100</x>
      <y>290</y>
      <width>81</width>
      <height>22</height>
     </rect>
    </property>
    <property name="maximum">
     <number>255</number>
    </property>
   </widget>
   <widget class="QPlainTextEdit" name="particle_PlainText">
    <property name="geometry">
     <rect>
      <x>260</x>
      <y>0</y>
      <width>321</width>
      <height>531</height>
     </rect>
    </property>
   </widget>
```

```xml
<widget class="QPushButton" name="addToStart_pushButton">
 <property name="geometry">
  <rect>
   <x>20</x>
   <y>340</y>
   <width>91</width>
   <height>31</height>
  </rect>
 </property>
 <property name="text">
  <string>Agregar Inicio</string>
 </property>
</widget>
<widget class="QPushButton" name="addEnd_pushButton">
 <property name="geometry">
  <rect>
   <x>120</x>
   <y>340</y>
   <width>91</width>
   <height>31</height>
  </rect>
 </property>
 <property name="text">
  <string>Agregar Final</string>
 </property>
</widget>
<widget class="QPushButton" name="showListParticle_pushButton">
 <property name="geometry">
  <rect>
   <x>50</x>
   <y>380</y>
   <width>131</width>
   <height>31</height>
  </rect>
 </property>
 <property name="text">
  <string>MOSTRAR</string>
 </property>
</widget>
<widget class="QLabel" name="originX_label">
 <property name="geometry">
  <rect>
   <x>40</x>
```

```xml
      <y>60</y>
      <width>47</width>
      <height>13</height>
     </rect>
   </property>
   <property name="text">
    <string>Origen X:</string>
   </property>
  </widget>
  <widget class="QLabel" name="originY_label">
   <property name="geometry">
    <rect>
     <x>40</x>
     <y>90</y>
     <width>47</width>
     <height>13</height>
    </rect>
   </property>
   <property name="text">
    <string>Origen Y:</string>
   </property>
  </widget>
  <widget class="QSpinBox" name="originY_spinBox">
   <property name="geometry">
    <rect>
     <x>100</x>
     <y>90</y>
     <width>81</width>
     <height>22</height>
    </rect>
   </property>
   <property name="maximum">
    <number>500</number>
   </property>
  </widget>
  <widget class="QSpinBox" name="originX_spinBox">
   <property name="geometry">
    <rect>
     <x>100</x>
     <y>60</y>
     <width>81</width>
     <height>22</height>
    </rect>
```

```xml
      </property>
      <property name="maximum">
       <number>500</number>
      </property>
     </widget>
     <widget class="QLabel" name="originX_label_2">
      <property name="geometry">
       <rect>
        <x>70</x>
        <y>20</y>
        <width>21</width>
        <height>16</height>
       </rect>
      </property>
      <property name="text">
       <string>Id:</string>
      </property>
     </widget>
     <widget class="QSpinBox" name="id_spinBox">
      <property name="geometry">
       <rect>
        <x>100</x>
        <y>20</y>
        <width>81</width>
        <height>22</height>
       </rect>
      </property>
      <property name="maximum">
       <number>500</number>
      </property>
     </widget>
    </widget>
   </item>
  </layout>
 </widget>
 <widget class="QMenuBar" name="menubar">
  <property name="geometry">
   <rect>
    <x>0</x>
    <y>0</y>
    <width>638</width>
    <height>21</height>
   </rect>
```

```xml
      </property>
    </widget>
    <widget class="QStatusBar" name="statusbar"/>
  </widget>
  <resources/>
  <connections/>
</ui>
```