Lab #01

**Task #1: Create a dummy fb layout.**

My approach was to use Qt designer to build a dummy layout, it returned a ***.ui*** file which I converted into python code using a script, now we can make changes in the code to manually adjust the layout further using PyQt5 functions.

**Application**

*# -\*- coding: utf-8 -\*-*

*# Form implementation generated from reading ui file 'C:\Users\izzug\Desktop\Docs\UNI\assingments\Sem - 6\dummyfb.ui'*

*# Created by: PyQt5 UI code generator 5.15.5*

*# WARNING: Any manual changes made to this file will be lost when pyuic5 is*

*# run again.  Do not edit this file unless you know what you are doing.*

from PyQt5 import QtCore, QtGui, QtWidgets

class Ui\_MainWindow(object):

    def setupUi(self, MainWindow):

        MainWindow.setObjectName("MainWindow")

        MainWindow.resize(932, 592)

        self.centralwidget = QtWidgets.QWidget(MainWindow)

        self.centralwidget.setObjectName("centralwidget")

        self.verticalLayoutWidget = QtWidgets.QWidget(self.centralwidget)

        self.verticalLayoutWidget.setGeometry(QtCore.QRect(140, 0, 591, 91))

        self.verticalLayoutWidget.setObjectName("verticalLayoutWidget")

        self.verticalLayout = QtWidgets.QVBoxLayout(self.verticalLayoutWidget)

        self.verticalLayout.setContentsMargins(0, 0, 0, 0)

        self.verticalLayout.setObjectName("verticalLayout")

        self.textBrowser\_3 = QtWidgets.QTextBrowser(self.verticalLayoutWidget)

        self.textBrowser\_3.setStyleSheet("background-color:rgba(3, 68, 255, 255)")

        self.textBrowser\_3.setObjectName("textBrowser\_3")

        self.verticalLayout.addWidget(self.textBrowser\_3)

        self.horizontalLayoutWidget = QtWidgets.QWidget(self.centralwidget)

        self.horizontalLayoutWidget.setGeometry(QtCore.QRect(0, 0, 141, 561))

        self.horizontalLayoutWidget.setObjectName("horizontalLayoutWidget")

        self.menu = QtWidgets.QHBoxLayout(self.horizontalLayoutWidget)

        self.menu.setContentsMargins(0, 0, 0, 0)

        self.menu.setObjectName("menu")

        self.textBrowser = QtWidgets.QTextBrowser(self.horizontalLayoutWidget)

        self.textBrowser.setStyleSheet("background-color:rgba(3, 68, 255, 255)")

        self.textBrowser.setObjectName("textBrowser")

        self.menu.addWidget(self.textBrowser)

        self.horizontalLayoutWidget\_2 = QtWidgets.QWidget(self.centralwidget)

        self.horizontalLayoutWidget\_2.setGeometry(QtCore.QRect(730, 0, 201, 561))

        self.horizontalLayoutWidget\_2.setObjectName("horizontalLayoutWidget\_2")

        self.friends = QtWidgets.QHBoxLayout(self.horizontalLayoutWidget\_2)

        self.friends.setContentsMargins(0, 0, 0, 0)

        self.friends.setObjectName("friends")

        self.textBrowser\_4 = QtWidgets.QTextBrowser(self.horizontalLayoutWidget\_2)

        self.textBrowser\_4.setStyleSheet("background-color:qlineargradient(spread:pad, x1:0, y1:0, x2:1, y2:0, stop:0 rgba(3, 68, 255, 255), stop:1 rgba(255, 255, 255, 255))")

        self.textBrowser\_4.setObjectName("textBrowser\_4")

        self.friends.addWidget(self.textBrowser\_4)

        self.horizontalLayoutWidget\_3 = QtWidgets.QWidget(self.centralwidget)

        self.horizontalLayoutWidget\_3.setGeometry(QtCore.QRect(140, 90, 591, 471))

        self.horizontalLayoutWidget\_3.setObjectName("horizontalLayoutWidget\_3")

        self.posts = QtWidgets.QHBoxLayout(self.horizontalLayoutWidget\_3)

        self.posts.setContentsMargins(0, 0, 0, 0)

        self.posts.setObjectName("posts")

        self.horizontalLayout = QtWidgets.QHBoxLayout()

        self.horizontalLayout.setObjectName("horizontalLayout")

        self.textBrowser\_2 = QtWidgets.QTextBrowser(self.horizontalLayoutWidget\_3)

        self.textBrowser\_2.setStyleSheet("background-color:rgb(255, 255, 255)")

        self.textBrowser\_2.setObjectName("textBrowser\_2")

        self.horizontalLayout.addWidget(self.textBrowser\_2)

        self.posts.addLayout(self.horizontalLayout)

        MainWindow.setCentralWidget(self.centralwidget)

        self.menubar = QtWidgets.QMenuBar(MainWindow)

        self.menubar.setGeometry(QtCore.QRect(0, 0, 932, 21))

        self.menubar.setObjectName("menubar")

        MainWindow.setMenuBar(self.menubar)

        self.statusbar = QtWidgets.QStatusBar(MainWindow)

        self.statusbar.setObjectName("statusbar")

        MainWindow.setStatusBar(self.statusbar)

        self.retranslateUi(MainWindow)

        QtCore.QMetaObject.connectSlotsByName(MainWindow)

    def retranslateUi(self, MainWindow):

        \_translate = QtCore.QCoreApplication.translate

        MainWindow.setWindowTitle(\_translate("MainWindow", "MainWindow"))

        self.textBrowser\_3.setHtml(\_translate("MainWindow", "<!DOCTYPE HTML PUBLIC \"-//W3C//DTD HTML 4.0//EN\" \"http://www.w3.org/TR/REC-html40/strict.dtd\">\n"

"<html><head><meta name=\"qrichtext\" content=\"1\" /><style type=\"text/css\">\n"

"p, li { white-space: pre-wrap; }\n"

"</style></head><body style=\" font-family:\'MS Shell Dlg 2\'; font-size:8.25pt; font-weight:400; font-style:normal;\">\n"

"<p align=\"center\" style=\" margin-top:0px; margin-bottom:0px; margin-left:0px; margin-right:0px; -qt-block-indent:0; text-indent:0px;\"><span style=\" font-size:12pt; font-weight:600; color:#ffffff; vertical-align:sub;\">Search Bar \_\_\_\_\_\_\_\_\_\_\_\_\_\_ </span></p></body></html>"))

        self.textBrowser.setHtml(\_translate("MainWindow", "<!DOCTYPE HTML PUBLIC \"-//W3C//DTD HTML 4.0//EN\" \"http://www.w3.org/TR/REC-html40/strict.dtd\">\n"

"<html><head><meta name=\"qrichtext\" content=\"1\" /><style type=\"text/css\">\n"

"p, li { white-space: pre-wrap; }\n"

"</style></head><body style=\" font-family:\'MS Shell Dlg 2\'; font-size:8.25pt; font-weight:400; font-style:normal;\">\n"

"<p align=\"center\" style=\"-qt-paragraph-type:empty; margin-top:0px; margin-bottom:0px; margin-left:0px; margin-right:0px; -qt-block-indent:0; text-indent:0px;\"><br /></p>\n"

"<p align=\"center\" style=\" margin-top:0px; margin-bottom:0px; margin-left:0px; margin-right:0px; -qt-block-indent:0; text-indent:0px;\"><span style=\" font-size:12pt; font-weight:600; color:#ffffff; vertical-align:super;\">Settings and Public Groups</span></p></body></html>"))

        self.textBrowser\_4.setHtml(\_translate("MainWindow", "<!DOCTYPE HTML PUBLIC \"-//W3C//DTD HTML 4.0//EN\" \"http://www.w3.org/TR/REC-html40/strict.dtd\">\n"

"<html><head><meta name=\"qrichtext\" content=\"1\" /><style type=\"text/css\">\n"

"p, li { white-space: pre-wrap; }\n"

"</style></head><body style=\" font-family:\'MS Shell Dlg 2\'; font-size:8.25pt; font-weight:400; font-style:normal;\">\n"

"<p align=\"center\" style=\"-qt-paragraph-type:empty; margin-top:0px; margin-bottom:0px; margin-left:0px; margin-right:0px; -qt-block-indent:0; text-indent:0px;\"><br /></p>\n"

"<p align=\"center\" style=\" margin-top:0px; margin-bottom:0px; margin-left:0px; margin-right:0px; -qt-block-indent:0; text-indent:0px;\"><span style=\" font-size:12pt; font-weight:600; color:#ffffff; vertical-align:super;\">Friend\'s List and Group-Chats</span></p></body></html>"))

        self.textBrowser\_2.setHtml(\_translate("MainWindow", "<!DOCTYPE HTML PUBLIC \"-//W3C//DTD HTML 4.0//EN\" \"http://www.w3.org/TR/REC-html40/strict.dtd\">\n"

"<html><head><meta name=\"qrichtext\" content=\"1\" /><style type=\"text/css\">\n"

"p, li { white-space: pre-wrap; }\n"

"</style></head><body style=\" font-family:\'MS Shell Dlg 2\'; font-size:8.25pt; font-weight:400; font-style:normal;\">\n"

"<p align=\"center\" style=\"-qt-paragraph-type:empty; margin-top:0px; margin-bottom:0px; margin-left:0px; margin-right:0px; -qt-block-indent:0; text-indent:0px;\"><br /></p>\n"

"<p align=\"center\" style=\" margin-top:0px; margin-bottom:0px; margin-left:0px; margin-right:0px; -qt-block-indent:0; text-indent:0px;\"><span style=\" font-size:12pt; font-weight:600; color:#0000ff; vertical-align:super;\">Posts and Activity</span></p></body></html>"))

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

    import sys

    app = QtWidgets.QApplication(sys.argv)

    MainWindow = QtWidgets.QMainWindow()

    ui = Ui\_MainWindow()

    ui.setupUi(MainWindow)

    MainWindow.show()

    sys.exit(app.exec\_())

**Task #2: Open an empty output window, set title, set screen size in pixels and then try to partition output window screen into say 4 parts or set dummy layout like Facebook. The objective is to set the position of our object say graph plot on our desired portion and position of the screen.**

I’ve used the same approach to create an application and embedded the graphics view widget onto 2 different layouts (portions on screen) of my choice. To display the graphs, I’ve manually coded draw() and clear() functions and mapped them to pushbuttons through Qt designer tool and a bit of coding.

**Application:**

import numpy as np

import math

from PyQt5 import QtCore, QtGui, QtWidgets

import pyqtgraph as pg

from pyqtgraph import PlotWidget, mkPen

class Ui\_MainWindow(object):

    def setupUi(self, MainWindow):

        MainWindow.setObjectName("MainWindow")

        MainWindow.resize(934, 525)

*#playing with position of the window*

*#MainWindow.setGeometry(0,0, 0,0)*

*#x= x - self.width()//2*

*#y = y - self.height()//2*

*# viewport/centralwidget inside main window*

*# centralwidget is a container where every other component is nested within*

        self.centralwidget = QtWidgets.QWidget(MainWindow)

        self.centralwidget.setObjectName("centralwidget")

*# Search Bar creation and positioning*

        self.verticalLayoutWidget = QtWidgets.QWidget(self.centralwidget)

        self.verticalLayoutWidget.setGeometry(QtCore.QRect(140, 0, 591, 91))

        self.verticalLayoutWidget.setObjectName("verticalLayoutWidget")

        self.verticalLayout = QtWidgets.QVBoxLayout(self.verticalLayoutWidget)

        self.verticalLayout.setContentsMargins(0, 0, 0, 0)

        self.verticalLayout.setObjectName("verticalLayout")

*# text browser component*

        self.textBrowser\_3 = QtWidgets.QTextBrowser(self.verticalLayoutWidget)

        self.textBrowser\_3.setStyleSheet("background-color:rgba(3, 68, 255, 255)")

        self.textBrowser\_3.setObjectName("textBrowser\_3")

        self.verticalLayout.addWidget(self.textBrowser\_3)

*# Menu Bar creation and positioning*

        self.horizontalLayoutWidget = QtWidgets.QWidget(self.centralwidget)

        self.horizontalLayoutWidget.setGeometry(QtCore.QRect(0, 0, 141, 561))

        self.horizontalLayoutWidget.setObjectName("horizontalLayoutWidget")

        self.menu = QtWidgets.QHBoxLayout(self.horizontalLayoutWidget)

        self.menu.setContentsMargins(0, 0, 0, 0)

        self.menu.setObjectName("menu")

*# nested widget container*

        self.widget\_2 = QtWidgets.QWidget(self.horizontalLayoutWidget)

        self.widget\_2.setObjectName("widget\_2")

        self.graphicsView\_2 = PlotWidget(self.widget\_2)

        self.graphicsView\_2.setGeometry(QtCore.QRect(0, 70, 141, 411))

        self.graphicsView\_2.setObjectName("graphicsView\_2")

*# text browser component*

        self.textBrowser = QtWidgets.QTextBrowser(self.widget\_2)

        self.textBrowser.setGeometry(QtCore.QRect(0, 0, 141, 71))

        self.textBrowser.setStyleSheet("background-color:rgb(0, 0, 255)")

        self.textBrowser.setObjectName("textBrowser")

*# no idea what*

        self.menu.addWidget(self.widget\_2)

        self.horizontalLayoutWidget\_2 = QtWidgets.QWidget(self.centralwidget)

        self.horizontalLayoutWidget\_2.setGeometry(QtCore.QRect(730, 0, 201, 561))

        self.horizontalLayoutWidget\_2.setObjectName("horizontalLayoutWidget\_2")

*# friend's list creation and positioning*

        self.friends = QtWidgets.QHBoxLayout(self.horizontalLayoutWidget\_2)

        self.friends.setContentsMargins(0, 0, 0, 0)

        self.friends.setObjectName("friends")

        self.textBrowser\_4 = QtWidgets.QTextBrowser(self.horizontalLayoutWidget\_2)

        self.textBrowser\_4.setStyleSheet("background-color:qlineargradient(spread:pad, x1:0, y1:0, x2:1, y2:0, stop:0 rgba(3, 68, 255, 255), stop:1 rgba(255, 255, 255, 255))")

        self.textBrowser\_4.setObjectName("textBrowser\_4")

        self.friends.addWidget(self.textBrowser\_4)

        self.widget = QtWidgets.QWidget(self.centralwidget)

        self.widget.setGeometry(QtCore.QRect(139, 89, 591, 401))

        self.widget.setObjectName("widget")

*# graph object*

        self.graphicsView = PlotWidget(self.widget)

        self.graphicsView.setGeometry(QtCore.QRect(10, 10, 571, 331))

        self.graphicsView.setObjectName("graphicsView")

*# button object*

        self.pushButton = QtWidgets.QPushButton(self.widget)

        self.pushButton.setGeometry(QtCore.QRect(10, 350, 281, 41))

*# button visuals*

        font = QtGui.QFont()

        font.setFamily("Verdana")

        font.setPointSize(16)

        self.pushButton.setFont(font)

        self.pushButton.setObjectName("pushButton")

        self.pushButton\_2 = QtWidgets.QPushButton(self.widget)

        self.pushButton\_2.setGeometry(QtCore.QRect(300, 350, 281, 41))

        font = QtGui.QFont()

        font.setFamily("Verdana")

        font.setPointSize(16)

        self.pushButton\_2.setFont(font)

        self.pushButton\_2.setObjectName("pushButton\_2")

        MainWindow.setCentralWidget(self.centralwidget)

        self.menubar = QtWidgets.QMenuBar(MainWindow)

        self.menubar.setGeometry(QtCore.QRect(0, 0, 934, 21))

        self.menubar.setObjectName("menubar")

        MainWindow.setMenuBar(self.menubar)

        self.statusbar = QtWidgets.QStatusBar(MainWindow)

        self.statusbar.setObjectName("statusbar")

        MainWindow.setStatusBar(self.statusbar)

        self.retranslateUi(MainWindow)

        QtCore.QMetaObject.connectSlotsByName(MainWindow)

*# button connection*

        self.pushButton.clicked.connect(lambda: self.draw())

        self.pushButton\_2.clicked.connect(lambda: self.clear())

*# bg-color*

        self.graphicsView.setBackground('#ffffff')

        self.graphicsView\_2.setBackground('#ffffff')

    def draw(self):

*# graph 1*

        x\_coordinate1 = np.arange(0, 100, 3)

        y\_coordinate1 = np.zeros(len(x\_coordinate1))

        y\_coordinate2 = np.zeros(len(x\_coordinate1))

        for i in range(len(x\_coordinate1)):

            x\_rad = x\_coordinate1[i]\*math.pi / 100

            y\_coordinate1[i] = 300 - 100\*math.cos (2\*x\_rad) +30\*math.cos(4\*x\_rad) + 6\*math.cos(6\*x\_rad)

            y\_coordinate2[i] = 1/y\_coordinate1[i]

        graphcolor = pg.mkPen(color=(0, 0, 217))

        self.graphicsView.plot(x=x\_coordinate1, y=y\_coordinate2, pen=graphcolor)

*# graph 2*

        x\_coordinate2 = np.arange(0, 10, 0.005)

        y\_coordinate3 = np.zeros(len(x\_coordinate2))

        for i in range(len(x\_coordinate2)):

            y\_coordinate3[i] = math.exp(-x\_coordinate2[i])\* math.cos(2\*math.pi\*x\_coordinate2[i])

        self.graphicsView\_2.plot(x=x\_coordinate2, y=y\_coordinate3, pen=graphcolor)

    def clear(self):

        self.graphicsView.clear()

        self.graphicsView\_2.clear()

    def retranslateUi(self, MainWindow):

        \_translate = QtCore.QCoreApplication.translate

        MainWindow.setWindowTitle(\_translate("MainWindow", "MainWindow"))

        self.textBrowser\_3.setHtml(\_translate("MainWindow", "<!DOCTYPE HTML PUBLIC \"-//W3C//DTD HTML 4.0//EN\" \"http://www.w3.org/TR/REC-html40/strict.dtd\">\n"

"<html><head><meta name=\"qrichtext\" content=\"1\" /><style type=\"text/css\">\n"

"p, li { white-space: pre-wrap; }\n"

"</style></head><body style=\" font-family:\'MS Shell Dlg 2\'; font-size:8.25pt; font-weight:400; font-style:normal;\">\n"

"<p align=\"center\" style=\" margin-top:0px; margin-bottom:0px; margin-left:0px; margin-right:0px; -qt-block-indent:0; text-indent:0px;\"><span style=\" font-size:12pt; font-weight:600; color:#ffffff; vertical-align:sub;\">Search Bar \_\_\_\_\_\_\_\_\_\_\_\_\_\_ </span></p></body></html>"))

        self.textBrowser.setHtml(\_translate("MainWindow", "<!DOCTYPE HTML PUBLIC \"-//W3C//DTD HTML 4.0//EN\" \"http://www.w3.org/TR/REC-html40/strict.dtd\">\n"

"<html><head><meta name=\"qrichtext\" content=\"1\" /><style type=\"text/css\">\n"

"p, li { white-space: pre-wrap; }\n"

"</style></head><body style=\" font-family:\'MS Shell Dlg 2\'; font-size:8.25pt; font-weight:400; font-style:normal;\">\n"

"<p align=\"center\" style=\" margin-top:0px; margin-bottom:0px; margin-left:0px; margin-right:0px; -qt-block-indent:0; text-indent:0px;\"><span style=\" font-size:12pt; font-weight:600; color:#ffffff; vertical-align:sub;\">Settings and Public Groups</span></p>\n"

"<p align=\"center\" style=\"-qt-paragraph-type:empty; margin-top:0px; margin-bottom:0px; margin-left:0px; margin-right:0px; -qt-block-indent:0; text-indent:0px; font-size:12pt; font-weight:600; color:#ffffff; vertical-align:sub;\"><br /></p></body></html>"))

        self.textBrowser\_4.setHtml(\_translate("MainWindow", "<!DOCTYPE HTML PUBLIC \"-//W3C//DTD HTML 4.0//EN\" \"http://www.w3.org/TR/REC-html40/strict.dtd\">\n"

"<html><head><meta name=\"qrichtext\" content=\"1\" /><style type=\"text/css\">\n"

"p, li { white-space: pre-wrap; }\n"

"</style></head><body style=\" font-family:\'MS Shell Dlg 2\'; font-size:8.25pt; font-weight:400; font-style:normal;\">\n"

"<p align=\"center\" style=\"-qt-paragraph-type:empty; margin-top:0px; margin-bottom:0px; margin-left:0px; margin-right:0px; -qt-block-indent:0; text-indent:0px;\"><br /></p>\n"

"<p align=\"center\" style=\" margin-top:0px; margin-bottom:0px; margin-left:0px; margin-right:0px; -qt-block-indent:0; text-indent:0px;\"><span style=\" font-size:12pt; font-weight:600; color:#ffffff; vertical-align:super;\">Friend\'s List and Group-Chats</span></p></body></html>"))

        self.pushButton.setText(\_translate("MainWindow", "Draw"))

        self.pushButton\_2.setText(\_translate("MainWindow", "Clear"))

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

    import sys

    app = QtWidgets.QApplication(sys.argv)

    MainWindow = QtWidgets.QMainWindow()

    ui = Ui\_MainWindow()

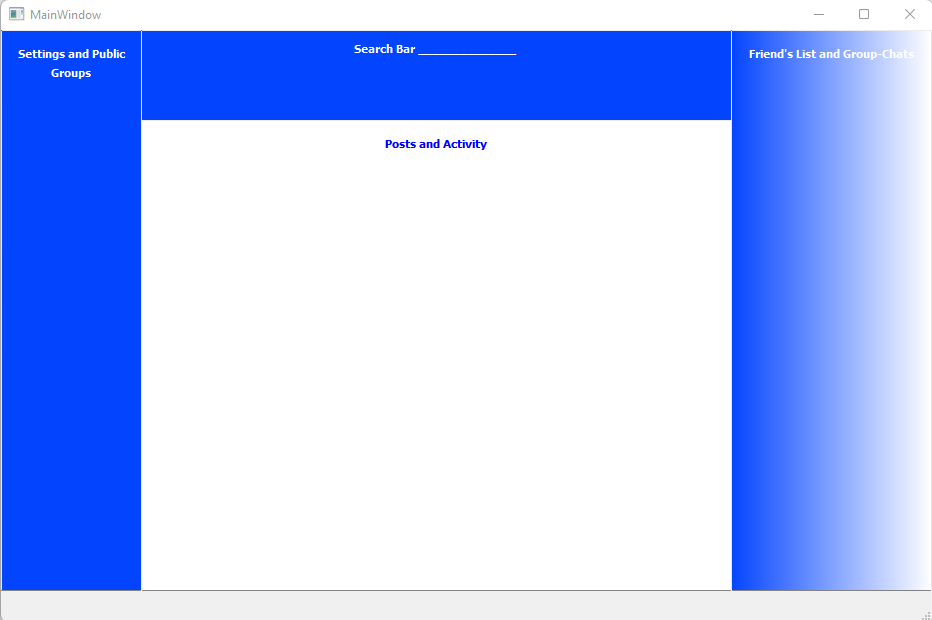
    ui.setupUi(MainWindow)

    MainWindow.setWindowTitle("Izhan Nadeem #B19102048")

    MainWindow.show()

    sys.exit(app.exec\_())

**Results:**

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