Laboratory Activity No. 9	
Introduction to GUI Development using Pycharm	
Course Code: CPE103	**Program:** BSCPE
Course Title: Object-Oriented Programming	**Date Performed:** 03-22-25
Section: BSCPE – 1A	**Date Submitted:**03-22-25
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1. Objective(s):

This activity aims to familiarize students with the Pycharm framework for GUI Development

2. Intended Learning Outcomes (ILOs):

The students should be able to:
2.1 Identify the main components in a GUI Application
2.2 Create a simple GUI Application using Pycharm Widgets

3. Discussion:

A Graphical User Interface (GUI) application is a program that the user can interact with through graphics (windows, buttons, text fields, checkboxes, images, icons, etc..) such as the Desktop GUI of Windows OS by using a mouse and keyboard unlike with a Command-line program or Terminal program that support keyboard inputs only.

Pycharm is an integrated development environment used for programming in Python. It provides code analysis, a graphical debugger, an integrated unit tester, integration with version control systems, and supports web development with Django.

4. Materials and Equipment:

Desktop Computer with Anaconda Python or Pycharm
Windows Operating System

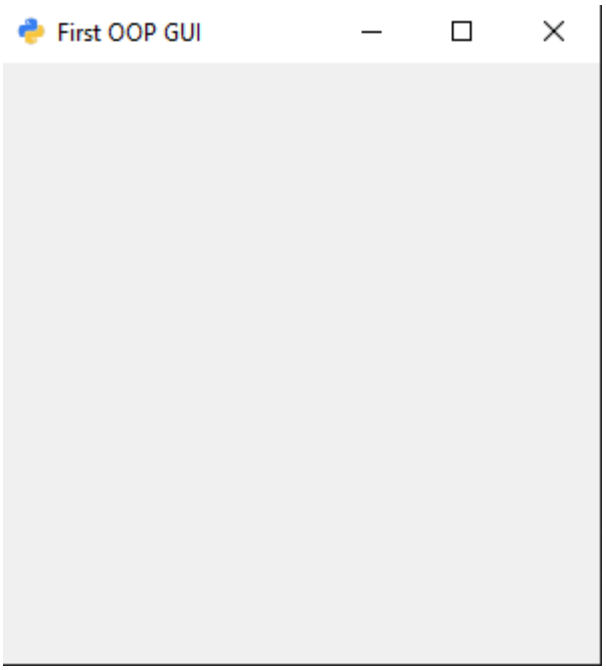
5. Procedure:

```python
import sys
from PyQt5.QtWidgets import QMainWindow, QApplication
from PyQt5.QtGui import QIcon

class App(QMainWindow):

    def __init__(self):
        super().__init__() # initializes the main window like in the previous one
        # window = QMainWindow()
        self.title= "First OOP GUI"
        self.initUI()

    def initUI(self):
        self.setWindowTitle(self.title)
        self.setGeometry(200,200,300,300)
        self.setWindowIcon(QIcon('pythonico.ico')) # sets an icon
        self.show()

if __name__ == '__main__':
    app = QApplication(sys.argv)
    Main = App()
    sys.exit(app.exec_())

```

2. Run the program and observe the output.

Adding an icon

3. Download any .ico picture from https://icon-icons.com/ or any similar sites.
4. Place the icon in your folder (ex. Oopfa1<lastname>_lab8)
5. Run the program again, the program should now have an icon similar to the program below.



PLEASE REFER TO THIS LINK: CPE-103-OOP-1-A/Adding an Icon.py at main · sebastianacebedo/CPE-103-OOP-1-A

Creating Buttons

1. Create a new .py file named **gui_buttons.py** then copy the program as shown below:

```python
import sys
from PyQt5.QtWidgets import QWidget,QApplication, QMainWindow, QPushButton
from PyQt5.QtGui import QIcon

class App(QWidget):

    def __init__(self):
        super().__init__() # initializes the main window like in the previous one
        # window = QMainWindow()
        self.title= "PyQt Button"
        self.x=200 # or left
        self.y=200 # or top
        self.width=300
        self.height=300
        self.initUI()

    def initUI(self):
        self.setWindowTitle(self.title)
        self.setGeometry(self.x,self.y,self.width,self.height)
        self.setWindowIcon(QIcon('pythonico.ico'))

        # In GUI Python, these buttons, textboxes, labels are called Widgets
        self.button = QPushButton('Click me!', self)
        self.button.setToolTip("You've hovered over me!")
        self.button.move(100,70)  # button.move(x,y)

        self.show()


if __name__ == '__main__':
    app = QApplication(sys.argv)
    ex = App()
    sys.exit(app.exec_())
```

2. Run the program and observe the output.
3. Add a new button named button2 named Register to the GUI that will display “this button does nothing.. yet..” when it is hovered.

PLEASE REFER TO THIS LINK: CPE-103-OOP-1-A/gui.button.py at main · sebastianacebedo/CPE-103-OOP-1-A

Creating Text Fields

1. Create a new file named **gui_text.py** and copy the code shown below:

```python
import sys
from PyQt5.QtWidgets import QWidget,QApplication, QMainWindow, QPushButton
from PyQt5.QtGui import QIcon

class App(QWidget):

    def __init__(self):
        super().__init__() # initializes the main window like in the previous one
        # window = QMainWindow()
        self.title= "PyQt Line Edit"
        self.x=200 # or left
        self.y=200 # or top
        self.width=300
        self.height=300
        self.initUI()

    def initUI(self):
        self.setWindowTitle(self.title)
        self.setGeometry(self.x,self.y,self.width,self.height)
        self.setWindowIcon(QIcon('pythonico.ico'))

        # Create textbox
        self.textbox = QLineEdit(self)
        self.textbox.move(20, 20)
        self.textbox.resize(280,40)

        self.show()

if __name__ == '__main__':
    app = QApplication(sys.argv)
    ex = App()
    sys.exit(app.exec_())
```

2. Run the program and observe the error.
3. Add an import QLineEdit to the Pycharm.Widgets import
4. Run the program and observe the output.
5. Add the following code below self.textbox.resize()

```python
self.textbox.setText("Set this text value")
```

4. PLEASE REFER TO THIS LINK: [CPE-103-OOP-1-A/gui.text.py at main · sebastianacebedo/CPE-103-OOP-1-A]

Creating Labels

1. Create a new file called **gui_labels.py** and copy the following code below:

```python
import sys
from PyQt5.QtWidgets import QWidget,QApplication, QMainWindow, QPushButton, QLineEdit
from PyQt5.QtGui import QIcon

class App(QWidget):

    def __init__(self):
        super().__init__() # initializes the main window like in the previous one
        # window = QMainWindow()
        self.title= "PyQt Line Edit"
        self.x=200 # or left
        self.y=200 # or top
        self.width=300
        self.height=300
        self.initUI()

    def initUI(self):
        self.setWindowTitle(self.title)
        self.setGeometry(self.x,self.y,self.width,self.height)
        self.setWindowIcon(QIcon('pythonico.ico'))

        self.textboxlbl = QLabel("Hello World! ",self)
        self.textboxlbl.move(30,25)

        self.show()
if __name__ == '__main__':
    app = QApplication(sys.argv)
    ex = App()
    sys.exit(app.exec_())

```

2. Run the program and observe the output.
3. Add the necessary Widget at the import line to make the program run.
4. Center the label by adjusting the parameters of .move(). This is called Absolute Positioning.
5. Create a new label called “This program is written in Pycharm” and place it at the center and below the Hello World! PLEASE REFER TO THIS LINK: CPE-103-OOP-1-A/gui_labels.py at main · sebastianacebedo/CPE-103-OOP-1-A

6. Supplementary Activity:

Task

Create an Object-Oriented GUI Application for a simple Account Registration System with the following required information: first name, last name, username, password, email address, contact number.

Requirements:

- The GUI must be centered on your screen.
- The GUI Components should be organized according to the order of information required using Absolute Positioning.
- The position of the components should be automatically computed based on the top component.
- All the text fields should be accompanied with their corresponding label on the left side while the text field is on the right side.
- There should a program title other than the Window Title.
- There should be a submit button and clear button at the bottom (submit button on the left, clear button on the right).
- The program should be launched on **main.py** while the GUI Codes should be on a separate file called **registration.py**

Please Refer to this Link: CPE-103-OOP-1-A/SupplementaryActNo9 at main · sebastianacebedo/CPE-103-OOP-1-A

Questions

1. What are the common GUI Applications that general end-users such as home users, students, and office employees use? (give at least 3 and describe each)

   Web browser, word processor, media player. Web browser helps user to access in the internet. Word processor are commonly used for documents which is I currently using. Lastly, Media Player to play Video and Music

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2. Based from your answer in question 1, why do you think home users, students, and office employees use those GUI programs?

   GUI programs are used because they are easily to understand that make the user more productive.

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3. How does Pycharm help developers in making GUI applications, what would be the difference if developers made GUI programs without GUI Frameworks such as Pycharm or Tkinter?

   PyCharm provides tools for easier GUI development, while without frameworks like Tkinter, developers would have to manually create complex graphical elements.

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4. What are the different platforms a GUI program may be created and deployed on? (Three is required then state why might a program be created on that specific platform)

   Windows, Linux, macOS. Windows are most commonly used as of today and mainly used in personal application. And I think, macOS is for security, design. Linux for performance and open source.

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5. What is the purpose of **app = QApplication(sys.argv)**, **ex = App()**, and **sys.exit(app.exec_())**?

   App = Qapplication(sys.argv) is used to start the system. And ex = App()_is used to create a window and sys.exit(app.exec_()) is used to keep the system running until it closed by user

7. Conclusion:

In summary, GUI Application make the technology make more efficient and easy to use for everyday lives. It Improves our proficienfy in in field like business, education and even teaching. Tools like PyCharm and frameworks like Tkinter and pyQt make the creation of GUI easier. Overall, GUI applications improve user experience and daily lives making it more accessible to every person.

8. Assessment Rubric: