**University of Tripoli – Faculty of Engineering Electric and Electronics Department**

# EE432

الاسم : أحمد مصطفى معتوق

رقم القيد : 2190203869

# To-Do List Application

## 1. Introduction

In today's fast-paced world, effective task management is essential for maintaining productivity and staying organized. Whether you're working on personal projects, professional tasks, or simply managing daily responsibilities, having a reliable system to track your tasks can make a significant difference. The To-Do List application is a simple yet powerful tool that can help individuals keep track of their goals, deadlines, and priorities.

This project involves the creation of a To-Do List application using Python's Tkinter library, which provides a graphical user interface (GUI) for users to interact with the app. Tkinter, being a standard Python library, makes it accessible and straightforward for Python developers to design and implement user-friendly applications. This To-Do List application allows users to efficiently add, delete, and manage tasks in a way that supports prioritization, filtering, and sorting based on different criteria.

The application was designed with user experience in mind, ensuring that it is intuitive and easy to navigate. Users can enter their tasks with a simple description and assign them a priority level—High, Medium, or Low. The tasks are then displayed in a list, where users can interact with them to modify, delete, or organize them as necessary. The task list is dynamically updated, providing a seamless experience when tasks are added, deleted, or sorted.

Additionally, the To-Do List application includes a search function, allowing users to quickly locate tasks based on keywords or priority. Sorting tasks by priority enables users to focus on their most critical tasks first, ensuring efficient time management and task completion. This project not only demonstrates the potential of Python and Tkinter for building functional desktop applications, but it also showcases the importance of simple, well-organized tools in helping individuals manage their time and responsibilities effectively.

By developing this application, the goal was not only to create a practical tool for task management but also to gain a deeper understanding of GUI programming and the fundamentals of application development using Python. The project serves as a stepping stone in exploring more advanced Python programming concepts and how they can be applied to real-world problems.

# 2. Objectives

The main objectives of this project were to create a functional and user-friendly To-Do List application using Python's Tkinter library, focusing on the following key aspects:

1. **Develop a Graphical User Interface (GUI)**
   To design a simple yet interactive GUI that allows users to manage their tasks effectively.
2. **Task Management Features**
   To implement functionality for adding, deleting, and modifying tasks. Users should also be able to assign priorities to tasks (High, Medium, Low).
3. **Search and Sort Tasks**
   To provide users with the ability to search tasks by keywords and sort them based on priority, helping to prioritize critical tasks.
4. **Dynamic Task Display**
   To ensure that the task list updates automatically when tasks are added, deleted, or sorted.
5. **User-Friendly Experience**
   To create an intuitive interface with a clean, modern design, ensuring the application is easy to use.
6. **Learn GUI Programming**
   To gain hands-on experience in building GUI applications in Python using Tkinter.

# 3. Components

The To-Do List application consists of the following key components:

1. **Task Class**
   This class defines a task, including its description, priority, and completion status. It serves as the core data structure for managing tasks.
2. **TodoListApp Class**
   This class represents the main application. It contains methods for adding, deleting, searching, and sorting tasks. It also handles the display and updates of the task list.
3. **Graphical User Interface (GUI)**
   The GUI is built using Tkinter and consists of:
   - **Task Entry**: An input field for entering new tasks along with their priorities.
   - **Task List**: A listbox that displays all tasks, which can be searched and sorted.

- o **Buttons**: Buttons for adding, deleting, and sorting tasks, as well as for searching tasks by description.

These components work together to provide a seamless user experience for managing tasks efficiently.

## 4. Features

The To-Do List application includes the following key features:

1. **Add Task**: Users can add tasks with descriptions and priorities (High, Medium, Low).
2. **Delete Task**: Users can remove tasks from the list.
3. **Search Tasks**: Users can search for tasks by description or priority.
4. **Sort by Priority**: Tasks can be sorted by priority, ensuring important tasks are highlighted.
5. **Dynamic Display**: The task list updates automatically when tasks are added, deleted, or sorted.

These features make it easy for users to manage their tasks and stay organized.

## 5. Conclusion

The To-Do List application provides an effective solution for managing tasks, helping users stay organized and focused on their priorities. With a user-friendly interface, it allows for easy task creation, deletion, and prioritization. Features such as task searching and sorting by priority enhance the overall user experience. By using Python and Tkinter, this project not only offers a practical tool but also serves as an opportunity to develop skills in GUI programming and application development. Ultimately, the To-Do List application supports better time management and productivity for users.