



**TRIBHUVAN UNIVERSITY  
INSTITUTE OF ENGINEERING  
PULCHOWK CAMPUS**

**LAB 3**

**MINI PROJECT**

**By:**

**Sinjal Dahal (081/BEL/080)**

**DEPARTMENT OF COMPUTER ENGINEERING  
LALITPUR, NEPAL**

### **Mini Project:**

#### **Simple To-Do Manager Using Functional Programming**

**Objective:** Manage a list of to-do tasks using functions, lambda, filter, and map.

#### **Requirements:**

- Allow adding tasks using a function `add_task(task_list, task_name)`.
- Each task is a dictionary: `{ "name": str, "completed": bool }`.
- Use `lambda` and `filter()` to list only incomplete tasks.
- Use `map()` to mark all tasks as completed.
- Include a `search_tasks(task_list, keyword)` function using `filter()` and `lambda`.

#### **Sample Workflow:**

```
tasks = []

tasks = add_task(tasks, "Buy groceries")
tasks = add_task(tasks, "Finish assignment")
tasks = add_task(tasks, "Call friend")

# List incomplete tasks

print("Pending Tasks:", list_pending(tasks))


# Mark all tasks as complete

tasks = complete_all(tasks)

# Search tasks with keyword "call"

print("Search Result:", search_tasks(tasks, "call"))
```

**Code:**

```
def add_task(task_list, task_name):  
    new_task = {"name": task_name, "completed": False}  
    return task_list + [new_task]  
  
def list_pending(task_list):  
    return list(filter(lambda task: not task["completed"], task_list))  
  
def complete_all(task_list):  
    return list(map(lambda task: {**task, "completed": True}, task_list))  
  
def search_tasks(task_list, keyword):  
    return list(filter(lambda task: keyword.lower() in task["name"].lower(), task_list))  
  
tasks = []  
tasks = add_task(tasks, "Buy groceries")  
tasks = add_task(tasks, "Finish assignment")  
tasks = add_task(tasks, "Call friend")  
  
print("Pending Tasks:", list_pending(tasks))  
tasks = complete_all(tasks)  
print("Search Result:", search_tasks(tasks, "call"))
```

**Output:**

```
Pending Tasks: [{ 'name': 'Buy groceries', 'completed': False}, { 'name': 'Finish assignment', 'completed': False}, { 'name': 'Call friend', 'completed': False}
]
Search Result: [{ 'name': 'Call friend', 'completed': True}]
```

Pending Tasks: [{ 'name': 'Buy groceries', 'completed': False}, { 'name': 'Finish assignment', 'completed': False}, { 'name': 'Call friend', 'completed': False}]

Search Result: [{ 'name': 'Call friend', 'completed': True}]