In [1]:
```python
import json
import os
from datetime import datetime, timedelta

class ToDoList:
    def __init__(self, filename='tasks.json'):
        self.filename = filename
        self.tasks = self.load_tasks()

    def load_tasks(self):
        try:
            with open(self.filename, 'r') as file:
                tasks = json.load(file)
        except (json.JSONDecodeError, FileNotFoundError):
            tasks = []
        return tasks

    def save_tasks(self):
        with open(self.filename, 'w') as file:
            json.dump(self.tasks, file, indent=2)

    def add_task(self, title, priority='medium', due_date=None):
        task = {
            'title': title,
            'priority': priority,
            'due_date': due_date,
            'completed': False
        }
        self.tasks.append(task)
        self.tasks = sorted(self.tasks, key=lambda x: x['due_date'] if x['due_date'] else datetime.max)
        self.save_tasks()

    def remove_task(self, task_index):
        if 0 <= task_index < len(self.tasks):
            del self.tasks[task_index]
            self.save_tasks()
            print("Task removed successfully.")
        else:
            print("Invalid task index.")

    def mark_completed(self, task_index):
        if 0 <= task_index < len(self.tasks):
            self.tasks[task_index]['completed'] = True
            self.save_tasks()
            print("Task marked as completed.")
        else:
            print("Invalid task index.")

    def display_tasks(self):
        if not self.tasks:
            print("No tasks found.")
            return

        print("\nTask List:")
        for index, task in enumerate(self.tasks):
            status = "[ ]"
            if task['completed']:
                status = "[X]"

            due_date_str = f"Due Date: {task['due_date']}" if task['due_date'] else ""
            print(f"{index + 1}. {status} {task['title']} (Priority: {task['priority']}) {due_date_str}")

def main():
    todo_list = ToDoList()

    while True:
        print("\n===== To-Do List Application =====")
        print("1. Add Task")
        print("2. Remove Task")
        print("3. Mark Task as Completed")
        print("4. Display Tasks")
        print("0. Exit")

        choice = input("Enter your choice: ")

        if choice == '1':
            title = input("Enter task title: ")
            priority = input("Enter task priority (high/medium/low): ").lower()
            due_date_str = input("Enter due date (YYYY-MM-DD): ")
            due_date = datetime.strptime(due_date_str, "%Y-%m-%d") if due_date_str else None

            todo_list.add_task(title, priority, due_date)
        elif choice == '2':
            task_index = int(input("Enter the task index to remove: ")) - 1
            todo_list.remove_task(task_index)
        elif choice == '3':
            task_index = int(input("Enter the task index to mark as completed: ")) - 1
            todo_list.mark_completed(task_index)
        elif choice == '4':
            todo_list.display_tasks()
        elif choice == '0':
            print("Exiting the application.")
            break
        else:
            print("Invalid choice. Please try again.")

if __name__ == "__main__":
    main()
```

```
===== To-Do List Application =====
1. Add Task
2. Remove Task
3. Mark Task as Completed
```

```
4. Display Tasks
0. Exit
Exiting the application.
```

In [ ]: