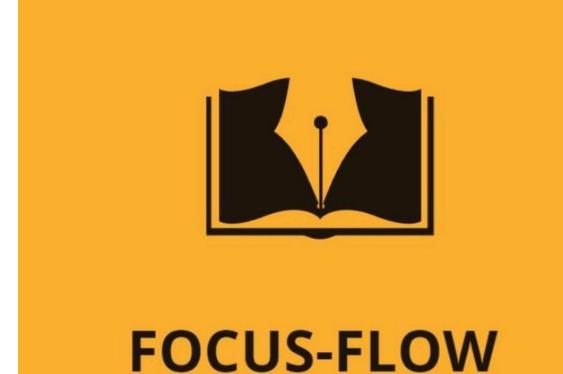
FOCUS-FLOW: TASK MANAGEMENT

COMPUTER SCIENCE PROJECT 2024-25



MADE BY SIDDHANG, PARTH AND AKSHIT 12A

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BONAFIDE CERTIFICATE

This is to certify that	has successfully	
completed his/her p	roject on the topic	
in	and submitted for All Ir	ndia Senior Secondary
Practical Examination	on held for the academic year 2024-	25.
School	: THE SAMHITA ACADEMY, BANGA	ALORE
Class	:XII	
Roll No	:	
Date of Submission	:	
Internal Examiner		External Examiner
Principal		Seal

<u>ACKNOWLEDGMENT</u>

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I sincerely thank my Computer Science teacher Mrs Neeti Goyal for her constant guidance, clear instructions, and support in completing my project and documentation.

I would also like to thank the principal, vice principal, and non-teaching staff of the computer department and other departments who helped me directly or indirectly execute this project.

Finally, yet importantly, I would like to express my heartfelt thanks to my parents for their support, my friends/classmates for their help, and wishes for the successful completion of this project.

PURPOSE OF PROJECT

The purpose of this project is to provide students with a comprehensive and user-friendly task management solution tailored to meet the unique demands of both academic and non-academic responsibilities. Recognizing the challenges students face in balancing their studies, extracurricular activities, and personal commitments, this application offers an intuitive platform to plan, organize, and track their tasks effectively.

The application enables students to categorize tasks by subject, ensuring that academic tasks like assignments, exams, and study goals are well-organized and accessible. It also accommodates non-academic responsibilities, such as extracurricular activities, tutoring, or personal errands, offering a holistic approach to time management. With features like calendar integration, students can visualize their deadlines, manage their schedules, and focus on the tasks that matter most.

The project emphasizes usability by including functionalities such as creating and managing user accounts, setting task priorities, adding notes for detailed descriptions, and marking tasks as complete once finished. Overdue tasks are flagged for attention, and the system also tracks completed tasks, giving students a sense of accomplishment and progress. The color-coded subject tabs provide a visually appealing way to differentiate between academic disciplines and simplify task organization.

This task manager goes beyond traditional planners by providing students with tools to monitor their progress and make better use of their time. Its clean design, robust database integration, and features like filtering tasks by status (pending, completed, or overdue) make it an invaluable resource for students aiming to achieve academic success while maintaining a balanced lifestyle. By streamlining task tracking and prioritization, the project ultimately fosters better time management, increased productivity, and reduced stress for students navigating their busy lives.

RESOURCE REQUIREMENT

System requirement:

MinimumRAMSize: 4MBMinimumHardDriveSize: 25MB

OSRequired: Windows (64 Bit)
 MinimumProcessorType: Intel 386 or higher
 Platform: Any Python Editor

ProgrammingLanguage: PythonDatabase: SQL

PROJECT DESIGN

Important functions, classes and modules used in Project:

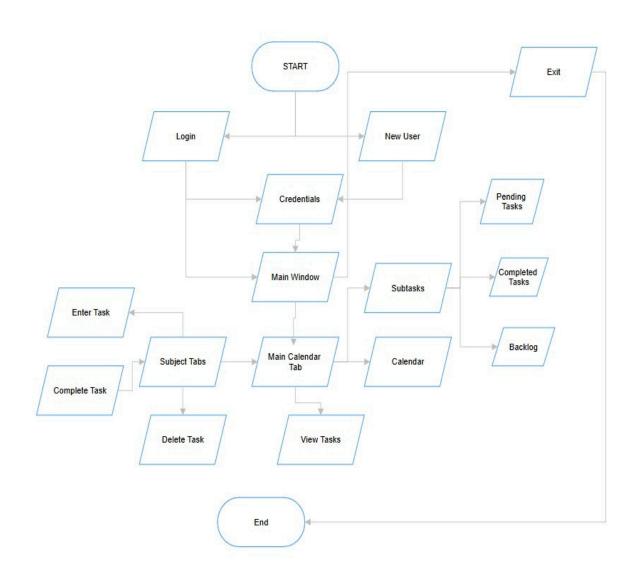
Module	ObjectName
PyQt5	Classes:QMainWindow,QDialog,Qwidget, QCalendarWidget, QPushButton, QLineEdit, QListWidget, QVBoxlayout(), QTextEdit(), QMessageBox(), QTabWidget(),
mysql.connector	<pre>Functions:connect(),cursor(),execute(), fetchall(),fetchone(), isconnected()</pre>
sys	Functions:exit(),execetc
Frontend	Note: Customloadingscreenmadein QDesginer

Note: A large amount of other Classes, Functions and Variables were also used, however in this report only the important/frequently used ones are mentioned

User Defined functions used in Project

FunctionName	FunctionPurpose
authenticate_userand create_new_user	Usedtocreateanewaccount(front-end)and toverifyaccountdetailsatthetimeoflogin (back-end)
MainWindow,LoginWindow, NewUserDialog,MainCalendar, SubjectTaskManagement	Corefront-endelementsoftheprogram, all ofthese have their ownscreen
load_tasks_for_selected_date, load_pending_tasks, load_completed_tasks, load_backlog_tasks, add_task, remove_task, insert_task_into_db, load_tasks, complete_task	Backendfunctionswhichinteractwiththesql database

FLOWCHART



SOURCE CODE

```
import sys
import mysql.connector
from PyQt5.QtWidgets import QApplication, QMainWindow, QVBoxLayout,
QLineEdit, QTextEdit, QPushButton, QListWidget, QWidget, QTabWidget,
QMessageBox, QCalendarWidget, QFormLayout, QDialog
from PyQt5.QtCore import QDate
from PyQt5.QtWidgets import QApplication
import frontend
#app = QApplication([])
111
loading screen = LoadingScreen() #check if working in school
loading screen.show()""
try:
  conn = mysql.connector.connect(
        host="localhost",
        user="root",
        password="12345",
      )
  cur=conn.cursor()
  cur.execute("CREATE DATABASE IF NOT EXISTS studyscheduler")
  print("Database STUDYSCHEDULER has been created successfully")
  cur.execute("USEstudyscheduler")
  cur.execute("""
        CREATE TABLE IF NOT EXISTS users (
          user id INT PRIMARY KEY AUTO INCREMENT,
          username VARCHAR(255) NOT NULL UNIQUE,
          password VARCHAR(255) NOT NULL
        )
        .....)
  print("Table USERS created successfully")
  cur.execute("""
        CREATE TABLE IF NOT EXISTS tasks (
          task id INT PRIMARY KEY AUTO INCREMENT,
          subject VARCHAR(255) NOT NULL,
          task description TEXT NOT NULL,
```

```
note TEXT,
          due dateDATE,
          user_id INT,
          iscompleteTINYINT(1)DEFAULTO,
          FOREIGN KEY (user_id) REFERENCES users(user_id)
        ....)
  print("Table tasks created successfully")
except mysql.connector.Error as e:
  print("Error:",e)
# Database Authentication
def authenticate_user(username, password):
  try:
    conn = mysql.connector.connect(
      host="localhost",
      user="root",
      password="12345",
      database="studyscheduler"
    cur = conn.cursor()
    cur.execute("SELECT * FROM users WHERE username=%s AND
password=%s", (username, password))
    user = cur.fetchone()
    conn.close()
    if user:
      return user[0] # Return user id
    else:
      return None
  except mysql.connector.Error as err:
    QMessageBox.critical(None, "Database Error", f"Error: {err}")
    return None
# Function to create a new user in the database
def create_new_user(username, password):
  if username and password:
    try:
```

```
conn = mysql.connector.connect(
        host="localhost",
        user="root",
        password="12345",
        database="studyscheduler"
      )
      cur = conn.cursor()
      cur.execute("INSERT INTO users (username, password) VALUES (%s, %s)",
(username, password))
      conn.commit()
      conn.close()
      QMessageBox.information(None, "Success", "New user created
successfully!")
    except mysql.connector.Error as err:
      QMessageBox.critical(None, "Database Error", f"Error: {err}")
  else:
    QMessageBox.warning(None, "Missing Information", "Please fill all fields.")
# MainWindow for the Application
class MainWindow(QMainWindow):
  def init (self):
    super(). init ()
    self.setWindowTitle("Study Planner")
    self.setGeometry(100, 100, 800, 600)
    self.login ui()
  def login ui(self):
    self.login window = LoginWindow()
    self.login window.show()
# Login Window to authenticate the user
class LoginWindow(QDialog):
  def __init__(self):
    super(). init ()
    self.setWindowTitle("Login")
    self.setGeometry(500, 300, 400, 200)
    layout = QFormLayout()
    self.username_input = QLineEdit(self)
```

```
self.password input = QLineEdit(self)
    self.password_input.setEchoMode(QLineEdit.Password)
    self.login button = QPushButton("Login", self)
    self.login button.clicked.connect(self.authenticate)
    # New User Button
    self.new user button = QPushButton("New User", self)
    self.new user button.clicked.connect(self.open new user dialog)
    layout.addRow("Username:", self.username input)
    layout.addRow("Password:",self.password_input)
    layout.addWidget(self.login button)
    layout.addWidget(self.new user button)
    self.setLayout(layout)
  def authenticate(self):
    username = self.username_input.text()
    password = self.password_input.text()
    user id = authenticate user(username, password)
    if user_id:
      self.accept() #Closetheloginwindowandopenthemainwindow
      self.main_window = MainApp(user_id)
      self.main window.showMaximized()
    else:
      QMessageBox.warning(self, "Authentication Failed", "Invalid username
or password.")
  def open new user dialog(self):
    dialog = NewUserDialog()
    dialog.exec_()
# Dialog for new user registration
class NewUserDialog(QDialog):
  def __init__(self):
    super().__init__()
    self.setWindowTitle("Create New User")
```

```
self.setGeometry(500, 300, 400, 200)
    layout = QFormLayout()
    self.username input = QLineEdit(self)
    self.password input = QLineEdit(self)
    self.password input.setEchoMode(QLineEdit.Password)
    self.create button = QPushButton("Create", self)
    self.create button.clicked.connect(self.create user)
    layout.addRow("New Username:", self.username_input)
    layout.addRow("New Password:", self.password input)
    layout.addWidget(self.create button)
    self.setLayout(layout)
  def create user(self):
    username = self.username input.text()
    password = self.password input.text()
    create new user(username, password)
    self.accept() #Closethedialog
# Main App for managing tasks and calendars
class MainApp(QMainWindow):
  def __init__(self, user_id):
    super(). init ()
    self.setWindowTitle("Study Planner")
    self.setGeometry(100, 100, 1000, 600)
    self.user id = user id
    self.tabs = QTabWidget(self)
    self.setCentralWidget(self.tabs)
    self.tabs.addTab(MainCalendar(self.user id),"MainCalendar")
    self.tabs.addTab(SubjectTaskManagement(self.user_id,"Physics"),
"Physics")
    self.tabs.addTab(SubjectTaskManagement(self.user id,"Chemistry"),
"Chemistry")
    self.tabs.addTab(SubjectTaskManagement(self.user id,"Math"),"Math")
```

```
self.tabs.addTab(SubjectTaskManagement(self.user_id,"Computer
Science"), "Computer Science")
    self.tabs.addTab(SubjectTaskManagement(self.user_id,"English"),
"English")
    self.tabs.addTab(SubjectTaskManagement(self.user id,"Tutions"),
"Tutions")
    self.tabs.addTab(SubjectTaskManagement(self.user_id,"Other"),"Other")
    self.showMaximized()
# Calendar for the main page
# Calendar for the main page
# Update the MainCalendar class to include the tab widget with "Pending
Tasks", "Completed Tasks", and "Backlog" tabs.
class MainCalendar(QWidget):
def init (self, user id):
    super().__init__()
    self.user id = user id
    layout = QVBoxLayout()
    # Main Tab Widget for Pending, Completed, and Backlog Tasks
    self.tab widget = QTabWidget(self)
    # Pending Tasks Tab
    self.pending tasks tab = QWidget()
    self.pending tasks list = QListWidget(self.pending tasks tab)
    self.load_pending tasks()
    pending layout = QVBoxLayout()
    pending_layout.addWidget(self.pending_tasks_list)
    self.pending tasks tab.setLayout(pending layout)
    self.tab_widget.addTab(self.pending_tasks_tab, "Pending Tasks")
    # Completed Tasks Tab
    self.completed_tasks_tab = QWidget()
    self.completed tasks list = QListWidget(self.completed tasks tab)
    self.load_completed_tasks()
    completed layout = QVBoxLayout()
    completed_layout.addWidget(self.completed_tasks_list)
    self.completed tasks tab.setLayout(completed layout)
```

```
self.tab_widget.addTab(self.completed_tasks_tab,"CompletedTasks")
    # Backlog Tab
    self.backlog tab = QWidget()
    self.backlog list = QListWidget(self.backlog tab)
    self.load backlog tasks()
    backlog layout = QVBoxLayout()
    backlog layout.addWidget(self.backlog list)
    self.backlog tab.setLayout(backlog layout)
    self.tab widget.addTab(self.backlog tab,"Backlog")
    # Add the tab widget to the main layout
    layout.addWidget(self.tab_widget)
    # Calendar widget
    self.calendar = QCalendarWidget(self)
    self.calendar.setGridVisible(True)
    self.calendar.selectionChanged.connect(self.load_tasks_for_selected_date)
self.calendar.setVerticalHeaderFormat(QCalendarWidget.NoVerticalHeader)#re
moves week number
    layout.addWidget(self.calendar)
    # Task list below the calendar
    self.task list = QListWidget(self)
    layout.addWidget(self.task_list)
    self.setLayout(layout)
    # Load tasks for today's date by default
    self.load_tasks_for_selected_date()
  def load_tasks_for_selected_date(self):
    """Load tasks for the date selected in the calendar, including notes."""
    selected_date = self.calendar.selectedDate().toString("yyyy-MM-dd")
    # Clear the task list
    self.task list.clear()
    try:
```

```
conn = mysql.connector.connect(
        host="localhost",
        user="root",
        password="12345",
        database="studyscheduler"
      )
      cur = conn.cursor()
      cur.execute("""
        SELECT subject, task description, note FROM tasks
        WHERE user id=%s AND due date=%s
      """, (self.user id, selected date))
      tasks = cur.fetchall()
      conn.close()
      # Display each task in the task list with notes
      if tasks:
        for subject, task description, note in tasks:
           self.task list.addItem(f"{subject}: {task description}\nNote: {note}")
      else:
        self.task_list.addItem("No data for selected date")
    except mysql.connector.Error as err:
      QMessageBox.critical(None, "Database Error", f"Error: {err}")
  def load pending tasks(self):
    """Load tasks that are pending (not completed) and display them with the
days remaining."""
    self.pending tasks list.clear()
    try:
      conn = mysql.connector.connect(
        host="localhost",
        user="root",
        password="12345",
        database="studyscheduler"
      )
      cur = conn.cursor()
      cur.execute("""
        SELECT subject, task_description, due_date FROM tasks
        WHERE user id=%s AND iscomplete = FALSE
      """, (self.user_id,))
```

```
print('works')
      tasks = cur.fetchall()
      print(tasks)
      conn.close()
      today = QDate.currentDate()
      for subject, task description, due date in tasks:
        due date obj = QDate.fromString(due date.strftime("%Y-%m-%d"),
"yyyy-MM-dd")
        days left = today.daysTo(due date obj)
        self.pending tasks list.addItem(f"{subject}: {task description} - Due in
{days left} days ({due date})")
    except mysql.connector.Error as err:
      QMessageBox.critical(None, "Database Error", f"Error: {err}")
  def load completed tasks(self):
    """Load tasks that have been marked as completed."""
    self.completed_tasks_list.clear()
    try:
      conn = mysql.connector.connect(
        host="localhost",
        user="root",
        password="12345",
        database="studyscheduler"
      )
      cur = conn.cursor()
      cur.execute("""
        SELECT subject, task description, due date FROM tasks
        WHERE user_id=%s AND iscomplete= TRUE
      """, (self.user id,))
      tasks = cur.fetchall()
      conn.close()
      for subject, task description, due date in tasks:
        self.completed tasks list.addItem(f"{subject}: {task description} -
Completed on {due_date}")
    except mysql.connector.Error as err:
```

```
QMessageBox.critical(None, "Database Error", f"Error: {err}")
  def load backlog tasks(self):
    """Load tasks that are overdue and not completed, displaying them with
'NOT DONE!'."""
    self.backlog_list.clear()
    try:
      conn = mysql.connector.connect(
        host="localhost",
        user="root",
        password="12345",
        database="studyscheduler"
      cur = conn.cursor()
      cur.execute("""
        SELECT subject, task description, due date FROM tasks
        WHERE user id=%s AND iscomplete= FALSE AND due date <
CURDATE()
      """, (self.user id,))
      tasks = cur.fetchall()
      conn.close()
      for subject, task description, due date in tasks:
        self.backlog_list.addItem(f"{subject}: {task_description} - Due on
{due date} - NOT DONE!")
    except mysql.connector.Error as err:
      QMessageBox.critical(None, "Database Error", f"Error: {err}")
# Task Management for each Subject
class SubjectTaskManagement(QWidget):
  def __init__(self, user_id, subject):
    super().__init__()
    self.user_id = user_id
    self.subject = subject
    self.init_ui()
  definit ui(self):
    layout = QVBoxLayout()
```

```
# Input fields for adding tasks
  self.task_input = QLineEdit(self)
  self.task input.setPlaceholderText(f"Entertaskfor{self.subject}")
  self.note_input = QTextEdit(self)
  self.note input.setPlaceholderText("Enter notes for the task")
  self.due date input = QLineEdit(self)
  self.due date input.setPlaceholderText("Enter due date (YYYY-MM-DD)")
  self.add button = QPushButton(f"Add {self.subject} Task", self)
  self.add button.clicked.connect(self.add task)
  self.complete button = QPushButton("Complete Task", self)
  self.complete button.clicked.connect(self.complete task)
  self.remove button = QPushButton(f"Remove {self.subject} Task", self)
  self.remove button.clicked.connect(self.remove task)
  self.task list = QListWidget(self)
  layout.addWidget(self.task input)
  layout.addWidget(self.note input)
  layout.addWidget(self.due date input)
  layout.addWidget(self.add_button)
  layout.addWidget(self.remove button)
  layout.addWidget(self.task_list)
  layout.addWidget(self.complete button)
  self.setLayout(layout)
  self.load tasks()
def add task(self):
  task description = self.task input.text()
  note = self.note_input.toPlainText()
  due_date = self.due_date_input.text()
```

```
if task description and due date:
      self.insert task into db(task description, note, due date)
      self.load tasks()
    else:
      QMessageBox.warning(self, "Missing Information", "Please fill all
fields.")
  def remove task(self):
    selected_task = self.task_list.currentItem()
    if selected task:
      task description = selected task.text()
      self.delete task from db(task description)
      self.load tasks()
    else:
      QMessageBox.warning(self, "No Task Selected", "Please select a task to
remove.")
  def insert_task_into_db(self, task_description, note, due_date):
    try:
      conn = mysql.connector.connect(
        host="localhost",
        user="root",
        password="12345",
        database="studyscheduler"
      cur = conn.cursor()
      cur.execute("""
        INSERT INTO tasks (subject, task_description, note, due_date, user_id)
        VALUES (%s, %s, %s, %s, %s)
      """, (self.subject, task description, note, due_date, self.user_id))
      conn.commit()
      conn.close()
    except mysql.connector.Error as err:
      QMessageBox.critical(None, "Database Error", f"Error: {err}")
  def delete_task_from_db(self, task description):
      conn = mysql.connector.connect(
         host="localhost",
```

```
user="root",
        password="12345",
        database="studyscheduler"
      cur = conn.cursor()
      cur.execute("""
        DELETE FROM tasks WHERE subject=%s AND task description=%s
AND user id=%s
      """, (self.subject, task_description, self.user_id))
      conn.commit()
      conn.close()
    except mysql.connector.Error as err:
      QMessageBox.critical(None, "Database Error", f"Error: {err}")
  def load_tasks(self):
    self.task_list.clear()
    try:
      conn = mysql.connector.connect(
        host="localhost",
        user="root",
        password="12345",
        database="studyscheduler"
      cur = conn.cursor()
      cur.execute("""
        SELECT task description FROM tasks
        WHERE subject=%s AND user id=%s and iscomplete = FALSE
      """, (self.subject, self.user id))
      tasks = cur.fetchall()
      conn.close()
      for task in tasks:
        self.task_list.addItem(task[0])
    except mysql.connector.Error as err:
      QMessageBox.critical(None, "Database Error", f"Error: {err}")
  def complete_task(self):
  # Get the selected task from the list
    selected task = self.task list.currentItem()
```

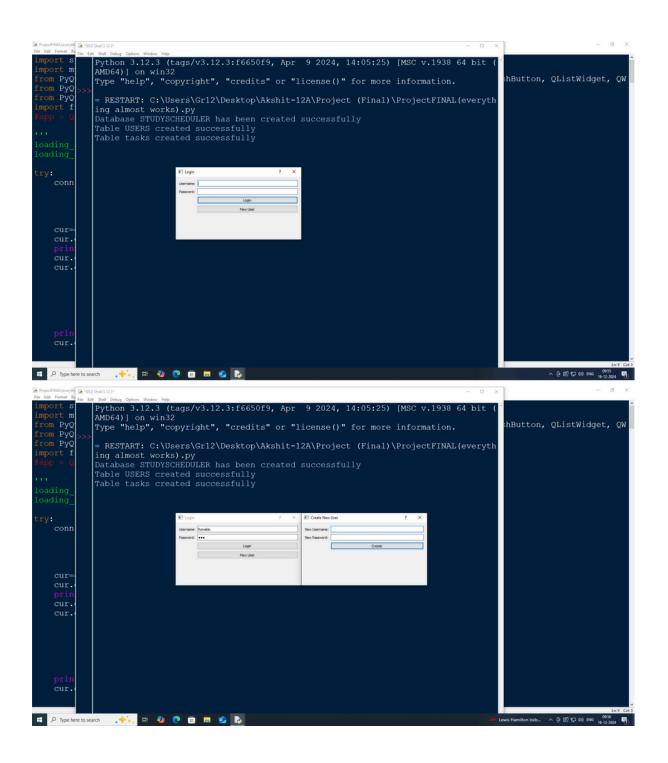
```
if selected task:
      description = selected task.text() # Get the task description from the
selected item
      try:
        # Establish connection to the database
        conn = mysql.connector.connect(
           host="localhost",
           user="root",
           password="12345",
          database="studyscheduler"
        cur = conn.cursor()
        # Update the task to mark it as complete
        cur.execute("""
           UPDATE tasks
           SET iscomplete = TRUE
           WHERE subject = %s AND task description = %s AND user id = %s
AND iscomplete = FALSE
        """, (self.subject, description, self.user_id))
        # Check if any row was updated
        if cur.rowcount > 0:
        conn.commit()
        QMessageBox.information(None, "Task Completed", "The task has
been marked as complete. Please restart the app to see changes",)
        else:
           QMessageBox.warning(None, "Task Not Found", "No incomplete
task matching the criteria was found.")
        conn.close()
      except mysql.connector.Error as err:
        # Handle database connection or query errors
        QMessageBox.critical(None, "Database Error", f"Error: {err}")
    else:
```

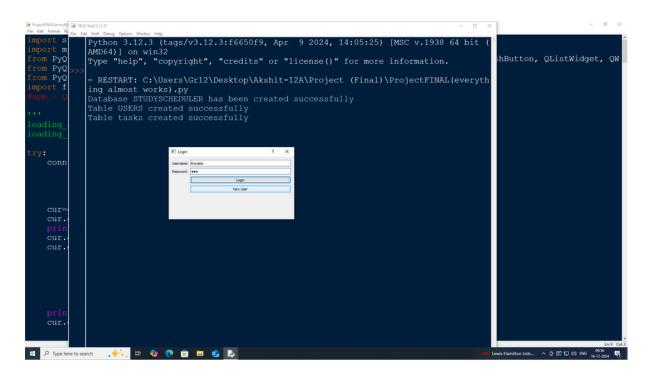
QMessageBox.warning(None, "No Task Selected", "Please select a task to mark as complete.")

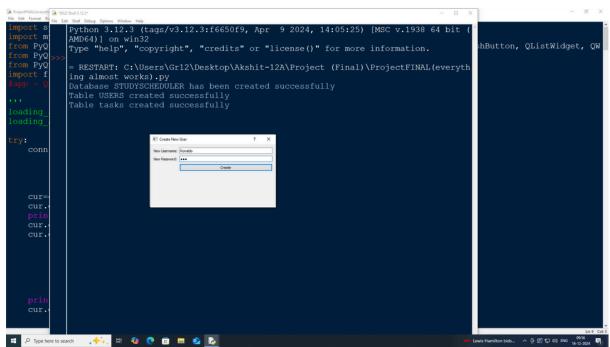
Main application execution
app = QApplication(sys.argv)
window = MainWindow()
#window.showMaximized()
sys.exit(app.exec_())

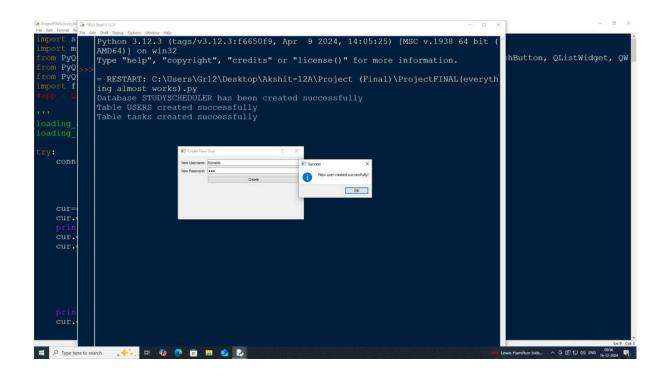
<u>OUTPUT</u>

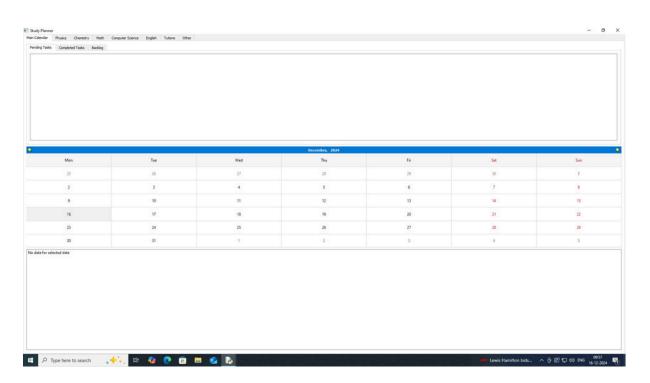


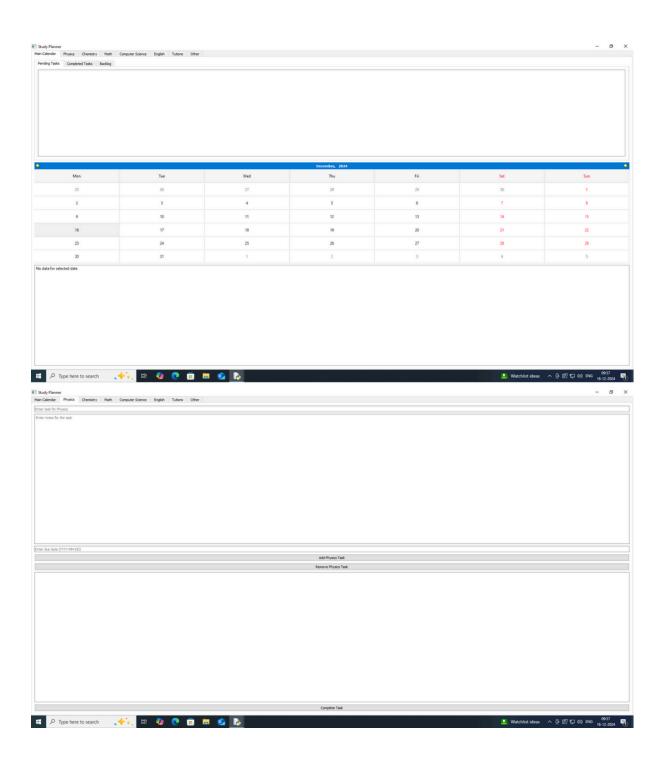




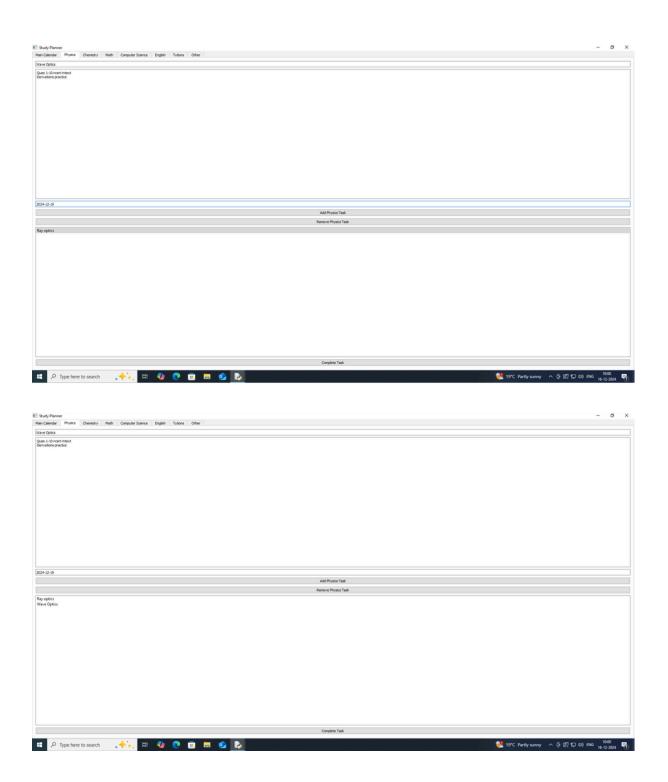


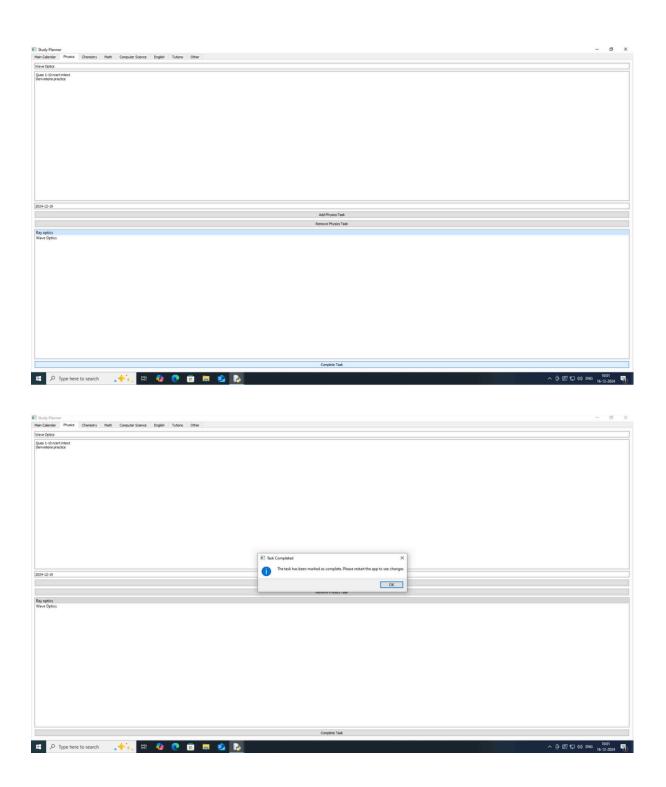


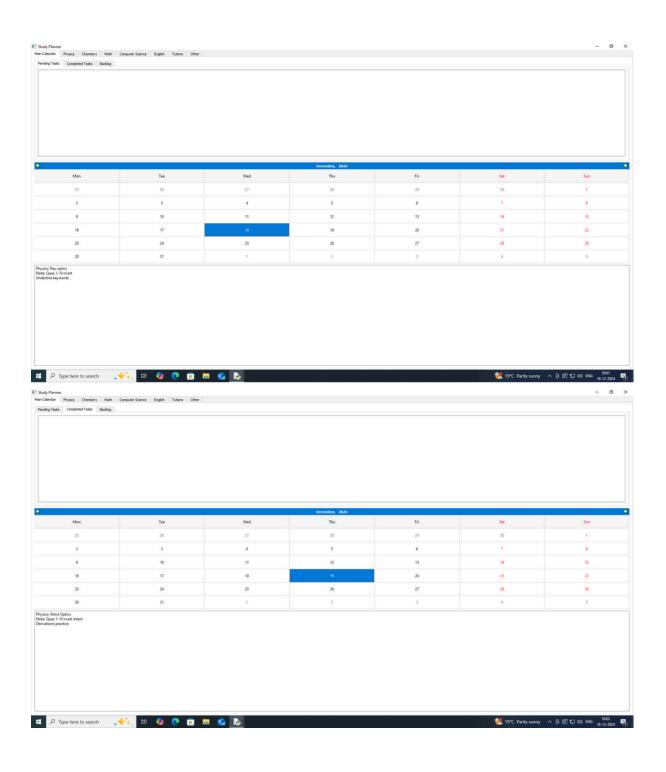


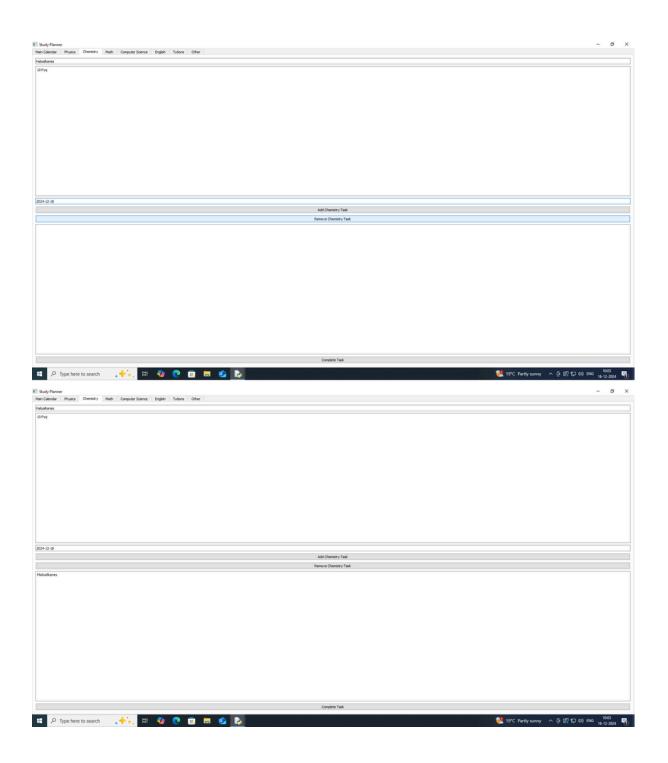


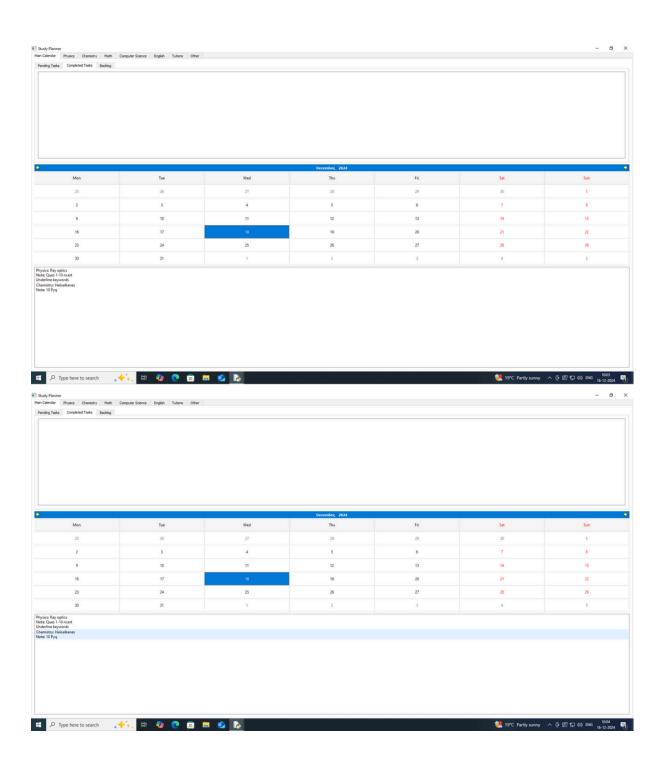


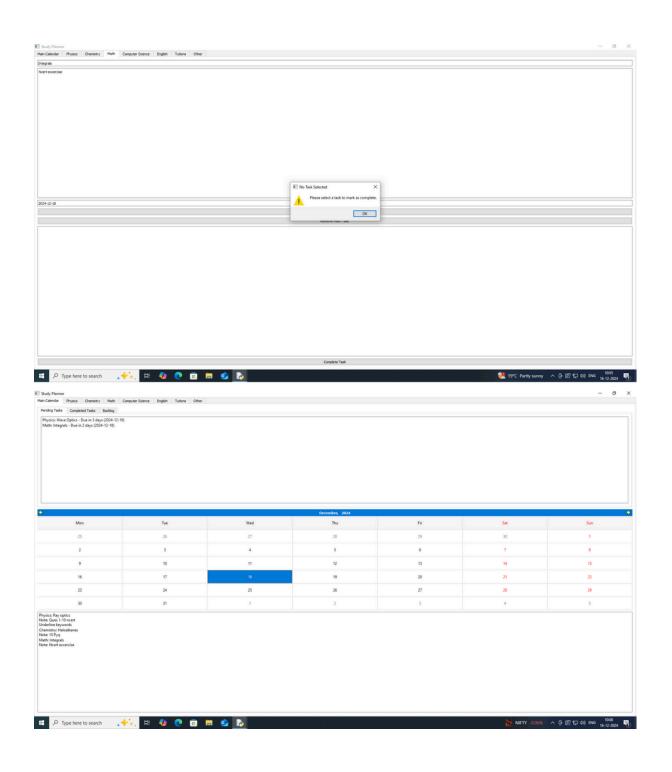


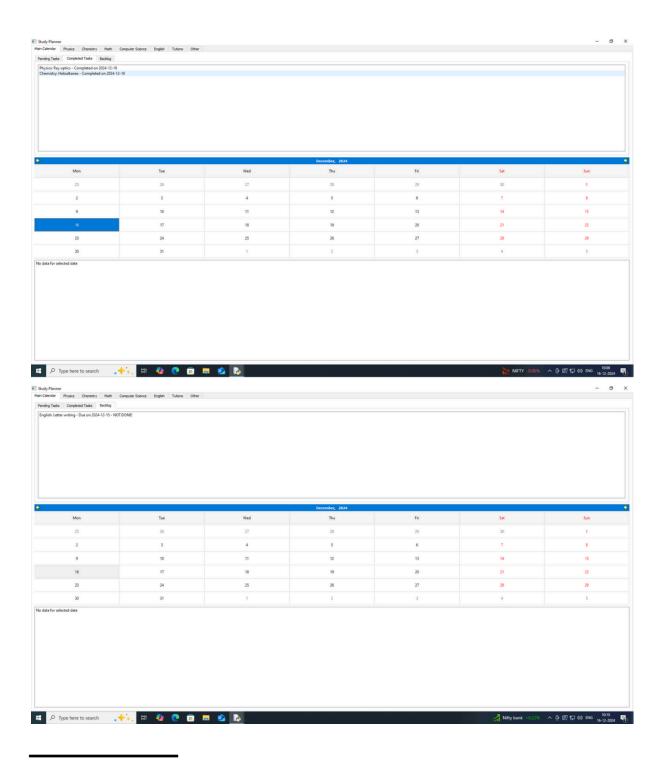












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