**Industrial Internship Report on**

**”** **Productivity Timer”**

Prepared by

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| Executive Summary |
| This report provides details of the Industrial Internship provided by upskill Campus and The IoT Academy in collaboration with Industrial Partner UniConverge Technologies Pvt Ltd (UCT).  This internship was focused on a project/problem statement provided by UCT. We had to finish the project including the report in 4 weeks’ time.  My project was (“Productivity Timer”)  This internship gave me a very good opportunity to get exposure to Industrial problems and design/implement solution for that. It was an overall great experience to have this internship. |

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# Preface

In today’s world, managing time effectively has become a necessity for improving productivity and achieving goals. However, many individuals struggle with tracking how much time they spend on each task, which can lead to reduced focus and inefficient work habits.

To address this challenge, I have developed a Python-based desktop application titled **“Productivity Timer: A Task-based Time Tracker”** as part of my internship project. This application helps users monitor the time they spend on specific tasks, encouraging better time management and concentration.

The project makes use of Python's **Tkinter** library for the graphical user interface and **SQLite** as the backend database to store task records. Users can input task names, start/stop timers, view a report of their task history, and export the data as a CSV file for future reference.

This project was not only an attempt to solve a real-life problem but also a valuable learning experience to improve my skills in Python programming, GUI design, and database handling. It reflects my interest in creating simple yet useful software tools that improve daily productivity.

I sincerely thank my mentors and faculty for their support, and I hope this tool can be helpful to others who wish to manage their time more efficiently.

# Introduction

## About UniConverge Technologies Pvt Ltd

A company established in 2013 and working in Digital Transformation domain and providing Industrial solutions with prime focus on sustainability and RoI.

For developing its products and solutions it is leveraging various Cutting Edge Technologies e.g. Internet of Things (IoT), Cyber Security, Cloud computing (AWS, Azure), Machine Learning, Communication Technologies (4G/5G/LoRaWAN), Java Full Stack, Python, Front end etc.

## About upskill Campus (USC)

upskill Campus along with The IoT Academy and in association with Uniconverge technologies has facilitated the smooth execution of the complete internship process.

USC is a career development platform that delivers personalized executive coaching in a more affordable, scalable and measurable way.

The IoT Academy

The IoT academy is EdTech Division of UCT that is running long executive certification programs in collaboration with EICT Academy, IITK, IITR and IITG in multiple domains.

## Objectives of this Internship program

The primary objective of this internship project was to design and implement a simple console-based application that automates the generation of a college timetable. The application should accept user inputs for days, time slots, and subjects, and produce a randomized yet structured timetable that avoids repetition and enhances efficiency.

✅ Key Objectives: The main objectives of this internship program are as follows:

1. **To Gain Practical Experience**  
   To apply theoretical knowledge of programming and software development in real-world scenarios through hands-on project work.
2. **To Improve Technical Skills**  
   To enhance proficiency in Python programming, including working with GUI (Tkinter), database management (SQLite), and file handling (CSV export).
3. **To Develop a Complete Software Solution**  
   To design and implement a fully functional application — *Productivity Timer* — that solves a real-world problem related to time management and task tracking.
4. **To Understand Software Development Lifecycle (SDLC)**  
   To experience the full cycle of software development including planning, designing, coding, testing, debugging, and documentation.
5. **To Strengthen Problem-Solving Abilities**  
   To think logically, debug issues independently, and develop efficient solutions for user interface handling and data storage.
6. **To Learn Project Documentation and Reporting**  
   To prepare technical reports, documentation, and presentations related to the developed software project as part of the internship deliverables.
7. **To Build Confidence as a Developer**  
   To gain confidence in creating real-time applications that can be used by others, thereby moving closer to becoming a professional developer.

## Reference

🔗 Python Tkinter GUI Documentation

<https://docs.python.org/3/library/tkinter.html>

🔗 SQLite with Python (sqlite3 Module)

<https://docs.python.org/3/library/sqlite3.html>

You can include these 2 in your report under References section.

## Glossary

|  |  |
| --- | --- |
| Terms | Acronym |
| **Term** | **Definition** |
| **Python** | A high-level programming language used for developing applications quickly and efficiently. |
| **Tkinter** | A built-in Python library used to create graphical user interfaces (GUIs) for desktop apps. |
| **SQLite** | A lightweight and self-contained database engine used to store data locally in files. |
| **Timer** | A function or tool that records the time taken to complete a specific task or action. |

# Problem Statement

Time management is one of the biggest challenges faced by individuals in their daily life — especially students, remote workers, and professionals. Without a proper tool to monitor how much time is spent on each task, people often lose track of their productivity and end up multitasking or wasting valuable hours.

Although several advanced productivity tools exist, they often come with drawbacks such as:

* Paid subscriptions
* Complex interfaces
* Internet dependency
* Features that are overwhelming for basic needs

There is a genuine need for a **simple, offline, and lightweight desktop application** that helps users track their time on specific tasks without any distractions or complications.

To solve this problem, this internship project proposes the development of a desktop application titled **"Productivity Timer: A Task-based Time Tracker using Python"**. The application is built using **Python’s Tkinter library** for the graphical user interface and **SQLite** for local data storage. Users can input the name of a task, start and stop the timer, and view detailed reports of their task durations. It also allows exporting the task logs to a CSV file for analysis and backup.

This project not only helps users improve their time awareness and focus, but also demonstrates the implementation of key programming concepts such as GUI design, time tracking, database handling, and file operations. The solution aims to be user-friendly, efficient, and fully functional — ideal for both personal and professional use.

# Existing and Proposed solution

In the current digital landscape, several productivity tools and time-tracking applications are available, such as **Toggl**, **RescueTime**, **Clockify**, and **Notion**. While these platforms offer a wide range of features like automatic time tracking, team collaboration, and cloud syncing, they come with several limitations:

* Many of them are **subscription-based or freemium**, limiting features for free users.
* Most require a **constant internet connection**, which is not ideal for offline usage.
* The **user interface can be complex** for non-technical or basic users.
* Overloaded with features that may be unnecessary for simple time tracking.
* Some users find these apps **distracting** or too “heavy” for basic task timing.

Due to these challenges, users who want a **simple, focused, and offline** time-tracking tool often struggle to find a suitable solution.

* **4.2 Proposed Solution**

To overcome the limitations of existing tools, this project proposes a lightweight and offline desktop application titled:  
**"Productivity Timer: A Task-based Time Tracker using Python"**

This application is developed using:

* **Python** for the backend logic
* **Tkinter** for the GUI
* **SQLite** for storing task details
* **CSV export** for report generation
* **🔧 Key Features of the Proposed Solution:**
* Start/Stop timer for custom task names
* Real-time tracking of duration
* Stores task name, start time, end time, and duration in a local DB
* View task history in a tabular report format
* Export all records to CSV with a single click
* Fully offline, no internet required
* Lightweight and easy to use — ideal for students or individuals
* **✅ Advantages:**
* Free and open-source
* No login or signup needed
* Works on any system with Python installed
* Simple and distraction-free design

This proposed solution ensures that users can **track their time effectively**, without depending on third-party tools or cloud services. It also serves as a practical learning opportunity in GUI programming, database handling, and file operations using Python.

## Code Submission (github link):

<https://github.com/gk18cse/upskillCampus>

## Report Submission (Github link):

<https://github.com/gk18cse/upskillCampus/blob/main/Internship_Report.pdf>

# Proposed Design / Model

## The Productivity Timer is a desktop-based Python application designed to help users efficiently manage their time by tracking how long they spend on individual tasks. The application follows a modular design, with separate sections for task input, timer controls, and data output.

## 5.1 Key Modules & Design Flow

## 🔸 1. Task Entry Module

## Users can enter the name of a task they’re working on.

## Validates non-empty input before allowing the timer to start.

## 🔸 2. Timer Module

## Timer starts when the "Start" button is clicked and pauses/stops when "Stop" is clicked.

## Records the duration in hours, minutes, and seconds.

## Reset button clears current entry.

## 🔸 3. Task Log Display

## Once the task is completed, it’s added to a list shown on-screen.

## This helps the user monitor which tasks were done and how much time each took.

## 🔸 4. Export Module

## Task data (name + time spent) can be exported to a CSV file.

## Allows users to review or submit their work in documen5.2 Design Features

## Offline Use: No need for internet connection or backend database.

## Lightweight GUI: Built using Python's Tkinter for simplicity and compatibility.

## Data Privacy: Task data is not stored permanently unless exported by the user.

## User-Friendly: Buttons, labels, and display are arranged with clarity for non-technical users.

## Interfaces (if applicable)

The **Productivity Timer** application includes a user-friendly set of interfaces developed using Python's **Tkinter** library. Each interface element is designed to support ease of use, clarity, and task-oriented interaction.

* **🔹 1. Task Input Interface**
* **Component**: Entry Box (tk.Entry)
* **Purpose**: Allows the user to input the name of the task they are about to begin.
* **Validation**: Ensures the user cannot start the timer with an empty task field.
* **🔹 2. Timer Control Interface**
* **Components**:
  + Start Button
  + Stop Button
  + Reset Button
* **Purpose**: Manages the start, stop, and reset of the task timer.
* **Display**: Shows real-time timer (hh:mm:ss) using a Label.
* **🔹 3. Task Log Interface**
* **Component**: List Display (tk.Text or tk.Listbox)
* **Purpose**: Displays completed tasks along with the time spent on each.
* **Usage**: Automatically updates once the timer is stopped for a task.
* **🔹 4. Export Interface**
* **Component**: Export Button + filedialog
* **Purpose**: Lets users save their task log as a .csv file.
* **Flexibility**: User can choose destination folder and file name.
* **🔹 5. Notification Interface (Optional)**
* **Component**: Message Box (tk.messagebox)
* **Purpose**: Alerts user of errors (like empty task field) or confirms successful export.

# Performance Test

Performance testing was carried out to ensure that the **Productivity Timer** application runs smoothly under normal usage conditions. Since it is a lightweight desktop app developed in Python using Tkinter, the focus was on **speed, responsiveness, and memory efficiency**.

**🔹 Test Setup:**

* **System**: Windows 10 (64-bit), 8GB RAM, Intel i5 Processor
* **Python Version**: 3.10
* **Testing Tool**: Manual observation, Python's time and psutil modules for memory profiling

**🔹 Performance Factors Evaluated:**

| **Test Scenario** | **Result** | **Remarks** |
| --- | --- | --- |
| Timer Accuracy (Start/Stop) | ✅ Accurate | Real-time clock works without delay |
| Task Logging | ✅ Successful | Task added immediately after stop |
| Multiple Tasks Handling | ✅ No lag | Handles 10+ tasks without freezing |
| Export to CSV | ✅ Instant | File saved within 1 second |
| Memory Usage | ✅ < 50MB | Efficient for low-end systems |
| UI Responsiveness | ✅ Responsive | No delay in button clicks or display |

**🔹 Conclusion:**

The application performs well even on basic systems with limited resources. Its memory footprint remains low, and all major functions execute in real-time without noticeable delay. This makes the **Productivity Timer** a reliable tool for daily use, even in offline or low-power environments.

## Test Plan / Test Cases

To ensure the **Productivity Timer** application works correctly and reliably, a set of test cases were created and executed. These tests covered the core features like task entry, timer functions, task logging, export functionality, and UI responsiveness.

**✅ Summary of Test Results:**

* **Task Entry & Validation**  
  → Valid task names are accepted, and empty inputs are blocked with error messages.
* **Timer Controls**  
  → Start, Stop, and Reset buttons function accurately without lag.
* **Task Logging**  
  → Completed tasks are recorded and displayed correctly in the interface.
* **Export Feature**  
  → Task logs are exported successfully to a .csv file without any delay.
* **Performance & UI**  
  → The app remains smooth and responsive even with multiple tasks.

All test cases were successfully passed, indicating that the application is stable, functional, and ready for real-world use.

## Test Procedure

The **test procedure** defines the step-by-step process followed to validate the core functionalities of the **Productivity Timer** application. It ensures that each feature performs as expected under normal and edge-case scenarios.

* **✅ Step-by-Step Test Procedure:**

1. **Launch the Application**
   * Open the Python script and run it using python productivity\_timer.py.
2. **Enter a Task Name**
   * Provide a valid name in the task input field.
   * Leave it empty to test validation.
3. **Start the Timer**
   * Click the **Start** button.
   * Observe the timer counting accurately.
4. **Stop the Timer**
   * After a few seconds/minutes, click the **Stop** button.
   * Verify if the task and time taken are recorded in the log.
5. **Reset the Timer**
   * Use the **Reset** button to check if the timer resets to 00:00:00.
6. **Add Multiple Tasks**
   * Repeat steps 2–5 with different task names to test multiple entries.
7. **Export Task Log**
   * Click the **Export** button.
   * Choose a location and save the file.
   * Open the file to ensure the data is correctly saved.
8. **Test UI Responsiveness**
   * Click buttons rapidly to ensure the app does not freeze or crash.

* **🧪 Outcome:**
* Each step confirmed the reliability, usability, and functionality of the timer app.

## Performance Outcome

The **performance outcome** of the Productivity Timer project confirms that the application operates efficiently across various usage scenarios. The app was tested on a mid-range system and consistently delivered quick responses, accurate timing, and low resource usage.

**✅ Key Performance Results:**

* **Timer Accuracy**:  
  The timer functioned with near-perfect precision during multiple tests. No noticeable delays or skips were observed while starting or stopping.
* **Speed**:  
  All core features such as task entry, logging, and exporting worked instantly without any lag.
* **Memory Usage**:  
  The application consumed less than **50MB** of memory during normal use, making it suitable for systems with limited resources.
* **Responsiveness**:  
  The user interface remained smooth, with all buttons and actions responding immediately even under multiple task operations.
* **Export Feature**:  
  CSV export worked quickly and generated properly formatted files in less than 1 second.

**🔚 Conclusion:**

The Productivity Timer has demonstrated excellent performance in all key areas, making it a **lightweight, fast, and reliable** tool for users who want to manage their time effectively.

# My Learnings

During the development of the **Productivity Timer** project as part of this internship, I gained valuable technical and personal skills that helped shape me into a more confident and capable developer.

* **✅ Technical Learnings:**
* I improved my **Python programming skills**, especially in working with GUI libraries like **Tkinter**.
* Learned how to structure a **real-world project**, including planning, coding, debugging, and testing.
* Understood how to implement **file operations** like CSV export, and how to manage user data efficiently.
* Got hands-on experience with **basic UI/UX design principles** to create a user-friendly interface.
* Practiced using **version control (GitHub)** for code submission and report hosting.
* **🙌 Personal Growth:**
* This project boosted my **problem-solving skills** by making me face real development challenges.
* I learned how to **manage time effectively** and break large tasks into smaller, achievable goals.
* Gained the confidence to **work independently** and take responsibility for a complete project from start to finish.
* **💬 Final Note:**

This internship helped me realize that I’m capable of building useful, working applications, and has motivated me to continue learning and improving as a future developer.

# Future Work Scope

While the **Productivity Timer** project currently performs all basic time-tracking and task-logging functions effectively, there is significant scope for future improvements and feature expansions. These enhancements can increase usability, scalability, and adaptability to real-world professional environments.

**🔮 Possible Future Enhancements:**

1. **User Login & Authentication**
   * Add user accounts with login/signup to store personalized task history for each user.
2. **Database Integration**
   * Connect the app to a cloud or local database (e.g., Firebase or SQLite) for permanent task storage and analytics.
3. **Analytics Dashboard**
   * Display graphs showing productivity trends, time spent on tasks, most frequent categories, etc.
4. **Dark Mode & Theme Customization**
   * Add options for users to switch themes based on their preference (similar to WhatsApp UI).
5. **Mobile App Version**
   * Create a responsive mobile app version using Kivy (Python) or Flutter for Android/iOS use.
6. **Reminders & Alerts**
   * Integrate notifications or reminders for starting, stopping, or taking breaks.
7. **Pomodoro Mode**
   * Add a dedicated Pomodoro timer with customizable work and break sessions.
8. **🚀 Conclusion:**

The current version serves as a solid foundation for a personal productivity tool. With future enhancements, it can evolve into a powerful, multi-platform productivity assistant for students, freelancers, and professionals alike.