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Activity Tracking System

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This Report Presented in Partial Fulfillment of the Requirements for the Degree
of Bachelor of Science in Software Engineering

APPROVAL

This project titled on “Activity Tracking System”, submitted by Name: Md.Keiuom Miah, ID: 171-35-199 to the Department of Software Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of Bachelor of Science in Software Engineering and approval as to its style and contents.

DECLARATION

It hereby declares that this project has been done by me under the supervision of Shariful Islam, Lecturer, Department of Software Engineering, and Daffodil International University. It also declares that neither this project nor any part of this has been submitted anywhere else for award of any degree.

Submitted By:

Keiuom

Md.Keiuom Miah

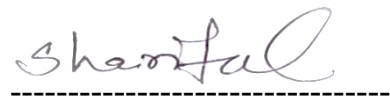
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Acknowledgement

First, I would like to express my special thanks and gratefulness to almighty God for His divine blessing makes it possible to complete the final year project successfully.

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I would like to thank our entire course mate in Daffodil International University, who took part in this discussion while completing the course work.

Finally, we must acknowledge with due respect the constant support and patients of our parents.

Abstract

Activity Tracker is a simple WPF tool for Windows users. It is very lightweight application that helps keep track their computer's activities. Such as time tracking, currently active program, all running program (background running program also included), keyboard activities, mouse activities. This tool also tracks your camera shot and screenshot based on your permission.

This is very helpful for online education or remote workers for track their activities. Also helpful for whom those want to track their computer activities for track their self.

Two types tracking are possible with this project. Web based (only time tracking) and tool based.

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CHAPTER 1: INTRODUCTION

Project Overview

Now a day's online dependency increases day by day. A lot of private company operate their company remotely. Also, our education system switches to online. So, there is no proper mechanism or way to track their employee or students.

Top Tracker is a tool where this kind of tracking possible. This tool helps company or education institution to keep track their employees or students what they are doing with their computer in office/class/exam time.

Top Tracker gives us a lot features to keep track computer activities. Such as time tracking (primary feature), active program, running all program, keyboard & mouse activity, camera or webcam shot and screenshot.

Top Tracker is a tool where there is no chance to miss track any background running program to catch. Such as video recording tools or screen recording tools which tools run in computer background.

We use a lot tools and technologies to develop this tool. The implementation of the system was done using C#, Asp.net-5 (Latest version), WPF (Windows Presentation Foundation), HTML-5, CSS-3, SASS, Bootstrap-4, JavaScript, Typescript, Asp.net Razor Page, Worker Service (Background service), AWS (Amazon Web Service), SQLite and SQL Server 2018 for database.

Project Purpose

In this Covid-19 pandemic situation, our online dependency is growing day by day and many companies have become online-dependent for their work. So, this tool helps them to handle their employees' activities and time tracking.

Background

- Extremely high-quality time tracking
- Effortless catch activities
- Centralized View of All Projects
- Detailed Productivity Reports

Benefits & Beneficiaries

- Increases Productivity
- Proper utilization of time management
- Saves Productivity
- Access from Anywhere
- Find different types of report
- Full Privacy Control
- Reduces Workload

Goals

- Manage all the record of the employee, student
- Student and employee can interact with his/her basic profile
- Two types of tracking
- Employee and Student finds their all kinds of records on in Dashboard
- Manager find a lot of generated record to track others
- Admin can block user account, Inactive user created project and permanently banned a user

System Model (Block Diagram)

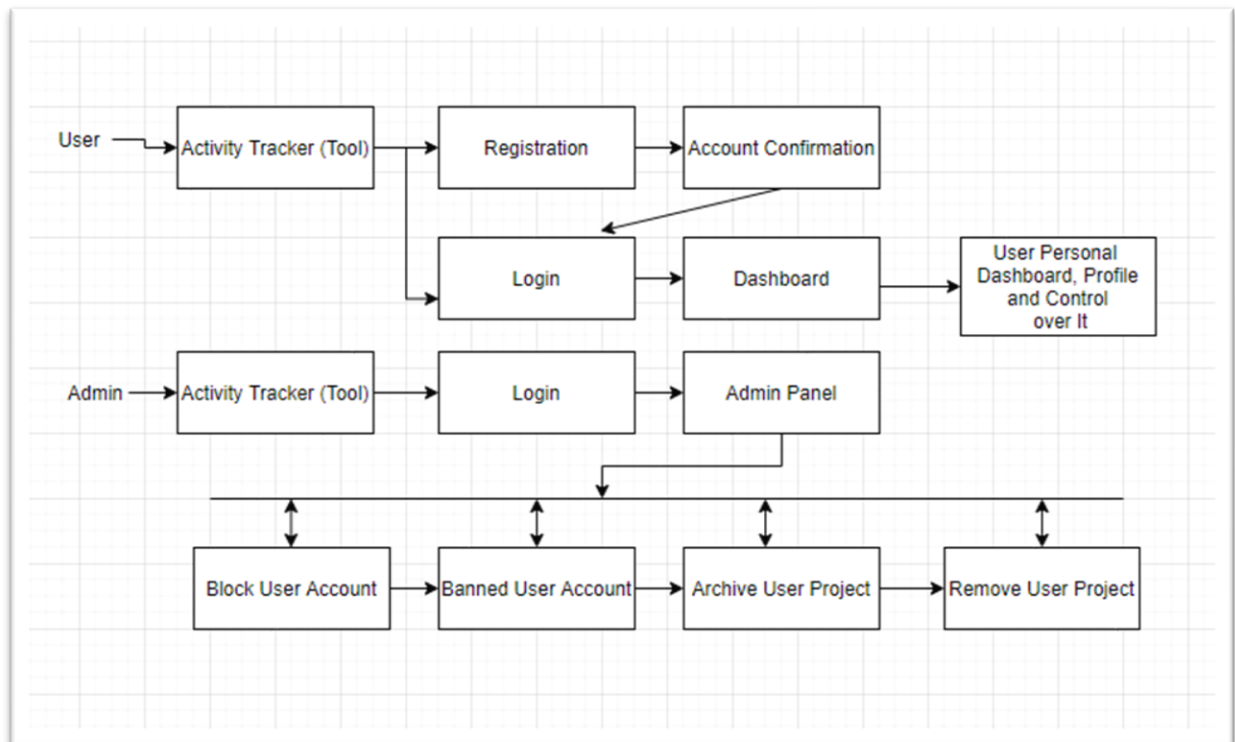


Figure 1: Block Diagram

Project Schedule (Gantt Chart)

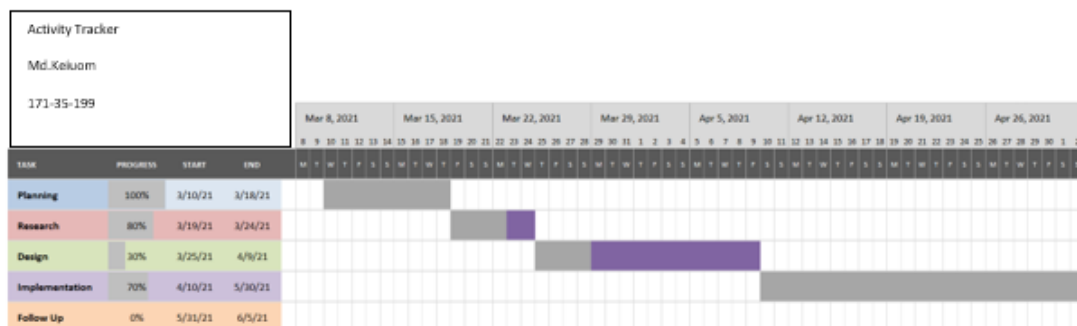


Figure 2: Gantt Chart

Figure 2: Gantt Chart

Project management tool (GitHub project)

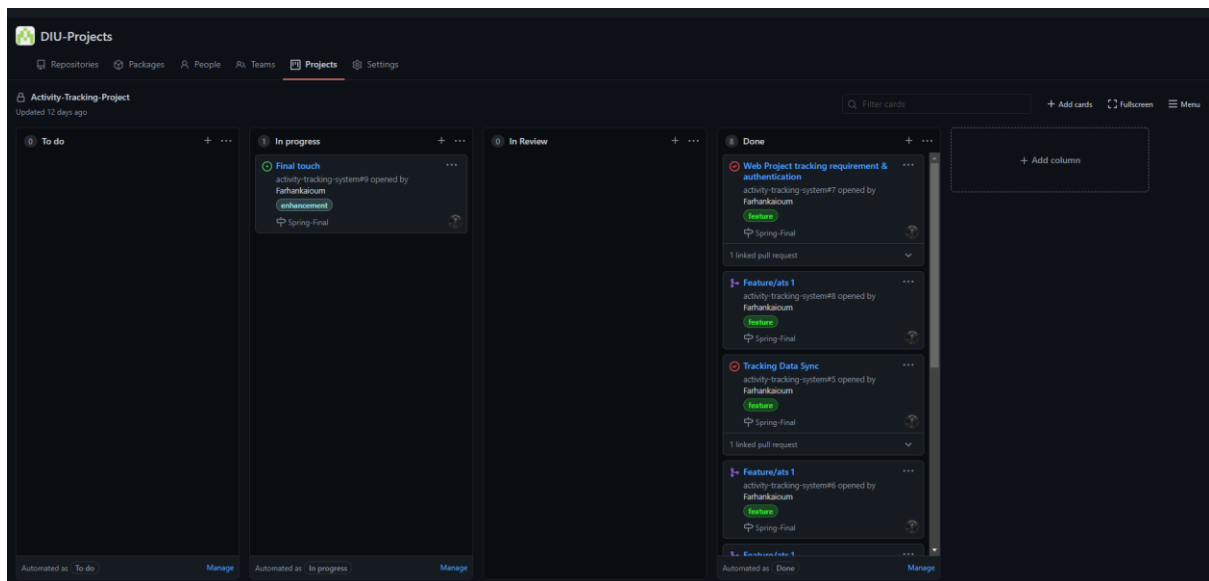


Figure 3: Dashboard

CHAPTER 2: SOFTWARE REQUIREMENT SPECIFICATION

Functional Requirements

Functional Requirements No	Functional Requirements Description
FR-1	User Should be logged into System
FR-2	User need to confirm account via email
FR-3	User Should have control over his/her personal Information
FR-4	User might be getting more control by his/her role.
FR-5	User finds centralized dashboard to find various types report.
FR-6	Admin can control the whole system. Ex: User management, Project Management
FR-7	Admin can configure website

Requirements and Specifications

Requirements & Specifications are important for a project as it contains what is necessary to build it. Requirements and Specification may change for a certain time as the project building on as it's demand

Hardware Requirements

To build the project we need hardware components, such as:

- Personal Computer (Laptop/Desktop)
- Internet Connection

Technical Requirements

To make this project we used different types of programming language and frameworks to make it more user friendly.

Frontend: HTML5, CSS3, SASS, Bootstrap, JavaScript, Typescript, jQuery and WPF

Backend: C#, Asp .Net Core Framework. Rest API, Razor Page

Database: SQL Server & SQLite

Others: Worker service

Operating System: Windows

HTML5

HTML stands for Hypertext Markup Language. HTML works as a display mode of a web application or a web page. CSS helps it for color combination and designs. HTML is a primary builder for a web page. HTML works by implementation of tags. There are so many tags for designing a page. HTML has elements and attributes. It has several kinds of content, each of which is allowed to be used in certain contexts and is disallowed in others.

CSS3

CSS is an assistant scripting language of HTML to implement high quality colors and designs. CSS modifies HTML documents. CSS controls the layout of web pages. It can do it all at once. CSS has three types. One is Inline CSS that is strongest, Internal or Embedded CSS, External CSS. The CSS file is linked to the HTML file to work. If the CSS file is not linked then the HTML file would not be modified

SASS

SASS means syntactically awesome style sheets. It is a CSS pre-processor. Sass is a preprocessor scripting language that is interpreted or compiled into Cascading Style Sheets.

Sass Script is the scripting language itself. I'm using Sass for avoid code duplication and awesome animation.

Bootstrap

Bootstrap is an open-source framework for CSS. It helps to do typography, forms, buttons, navigation and so more interface components. As it is JavaScript extension supported, so it is easy to build a good visual web page.

JavaScript

JavaScript is a language that is used in both server-side and user-side for making the webpages interactive. Engage elements are provided to users by JavaScript. JavaScript is a helping hand for HTML & CSS to make a webpage more interactive. We used JavaScript to use ajax and manipulating the DOM

Typescript

Typescript is superset of JavaScript. It is a programming language developed and maintained by Microsoft. The main purpose of TypeScript is to help catch mistakes early through a type system and to make JavaScript development more efficient.

jQuery

jQuery is a JavaScript library which gives a simple language API endpoint to manipulate the DOM tree. It is very easy to work with ajax, CSS manipulation using jQuery.

WPF

WPF (Windows Presentation Foundation) is a UI framework that created desktop client applications. It is a free and open-source graphical subsystem originally developed by

Microsoft for rendering user interfaces in Windows-based applications. WPF, previously known as “Avalon” was initially released as part of .NET Framework 3.0 in 2006.

C#

C# is a general-purpose, multi-paradigm programming language encompassing static typing, strong typing, lexically scoped, imperative, declarative, functional, generic, object-oriented, and component-oriented programming disciplines.

Asp .Net Framework

ASP.NET is an open-source web **framework**, created by Microsoft, for building modern web apps and services that run on macOS, Linux, Windows, and Docker.

REST Framework

Representational state transfer (REST) is a software architectural style that was created to guide the design and development of the architecture for the World Wide Web. REST defines a set of constraints for how the architecture of an Internet-scale distributed hypermedia system, such as the Web.

Razor Pages

Razor Pages is another way to develop asp.net core application. Razor Pages maintain MVVM architecture. Razor Pages can make coding page-focused scenarios easier and more productive than using controllers and views.

SQL Server

Microsoft SQL Server is a relational database management system developed by Microsoft. As a database server, it is a software product with the primary function of storing and retrieving data as requested by other software applications—which may run either on the same computer or on another computer across a network.

SQLite

SQLite is also a relational database management system contained in a C library. This is very lightweight. SQLite is not a client-server database system. Rather, it is embedded into the end program. SQLite generally follows PostgreSQL syntax.

Windows

Microsoft Windows, commonly referred to as Windows, is a group of several proprietary graphical operating system families, all of which are developed and marketed by Microsoft

CHAPTER 3: SYSTEM ANALYSIS

Use Case Diagram

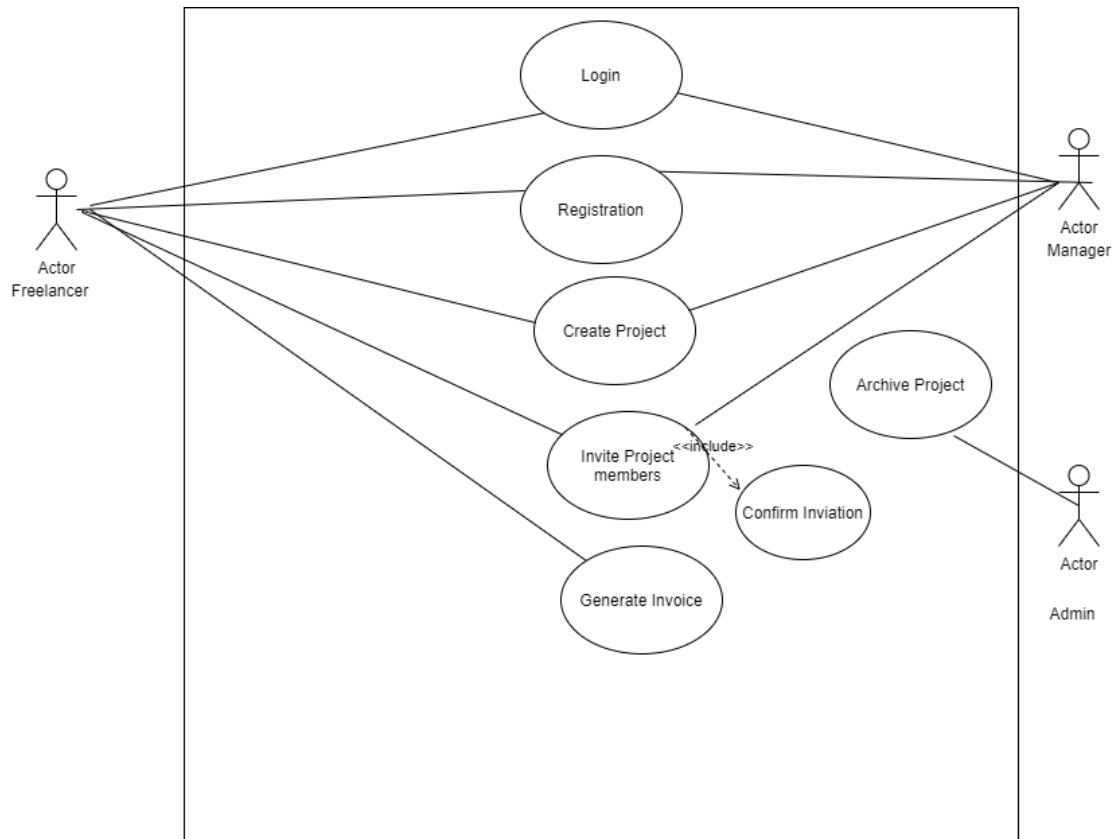


Figure 3: Use Case Diagram

Use Case Description

Use Case Id	ActivityTracker_UC_1
Use Case Name	Can Register
Created By	Md.Keiuom Miah
Created Data	10-06-2021
Description	The user registration into the Activity Tracking System in this use scenario. The actors starting this use case are any type of users.
Primary Actor	User

Secondary Actor	None
Precondition	1. User must be using unique email address
Post Condition	1. The system sent a account verification link via email address

Use Case Id	ActivityTracker_UC_2
Use Case Name	Can Login
Created By	Md.Keiuom Miah
Created Date	10-06-2021
Description	The user logs into the Activity Tracker System in this use scenario. The actors starting this use case are general user, manager, and Admin.
Primary Actor	User
Secondary Actor	None
Pre-Condition	1. Verify account
Post-Condition	2. This system displays the relevant dashboard page.

Use Case Id	ActivityTracker_UC_3
Use Case Name	Manage Profile
Created By	Md.Keiuom Miah
Created Date	10-06-2021
Description	This use case describes how a user manages his/her own profile. The actors starting this use case are general User, Manager, and Admin

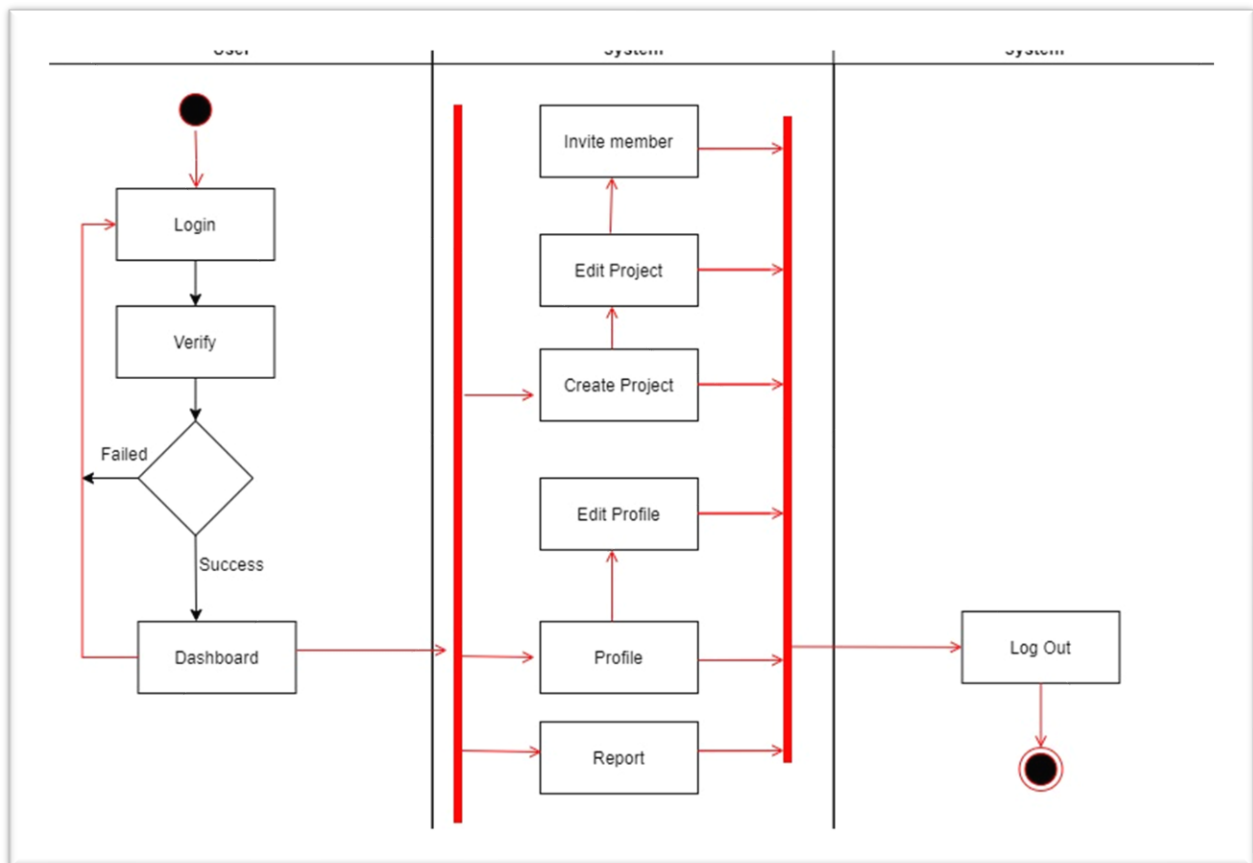
Primary Actor	User
Secondary Actor	None
Pre-Condition	1. Users must have an active account in this system.
Post-Condition	1. The system displays the relevant dashboard page

Use Case Id	ActivityTracker_UC_4
Use Case Name	Create Project
Created By	Md.Keiuom Miah
Created Date	10-06-2021
Description	This use case describes how an user can create his/her own project. The actors starting this use case are General User, Manager user, and Admin
Primary Actor	User
Secondary Actor	None
Pre-Condition	1. Users must have verified account in this system.
Post-Condition	1. The system displays all the details of his/her project

User Case Id	ActivityTracker_UC_5
Use Case Name	Invite project member
Created By	Md.Keiuom Miah
Created Date	10-06-2021

Description	This use case describes how an user can invite other users in his/her project member in his/her project. The actors starting this use case are General User, and Manager User
Primary Actor	User
Secondary Actor	None
Pre-Condition	1. Users must have a created project
Post-Condition	1. The system displays the relevant alert message to the user 2. The system sent a project invitation link via email.

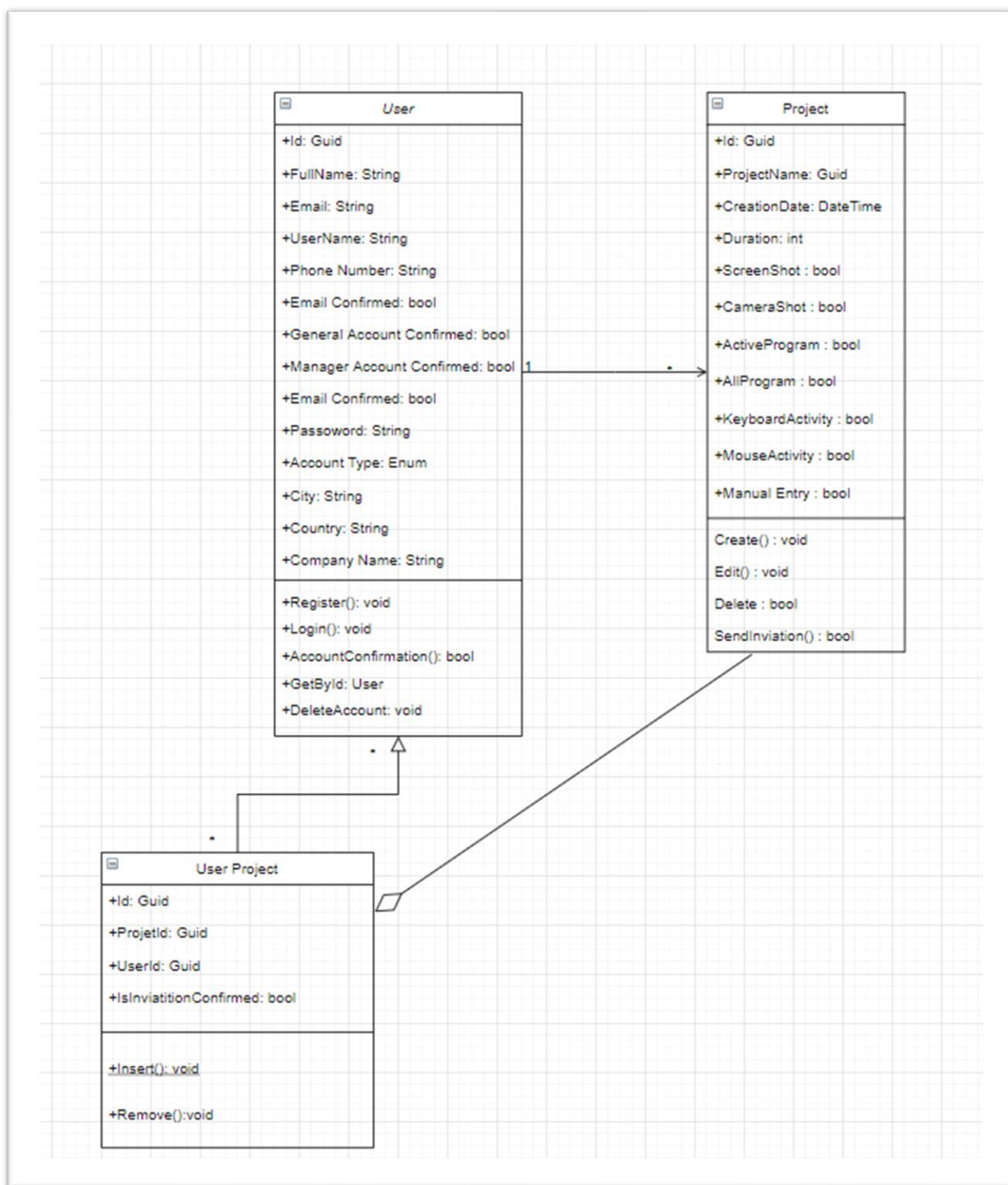
Activity Diagram

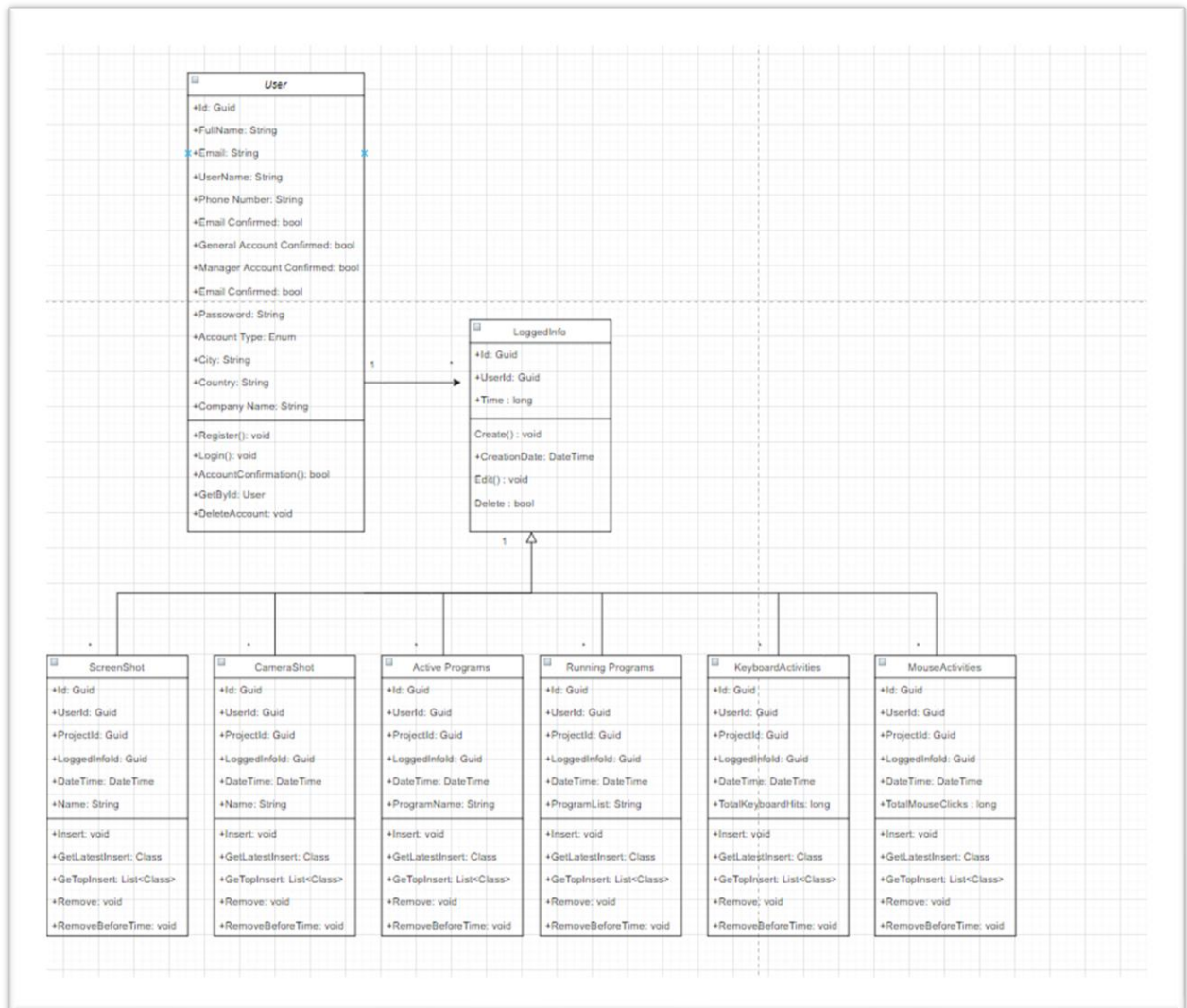


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Class Diagram





CHAPTER 4: PROJECT SUMMARY

GitHub Link

<https://github.com/DIU-Projects/activity-tracking-system>

Limitation

When I start to planning this project, I don't know anything how to build this project. Because this project all about OS related. I need few permissions from OS. That's why it's very tricky and tuff project. I'm a C# developer. But there is no library provide C# to catch those type activities, but C# provide few C++ low level API to achieve these functionalities. In further if something now working properly, it's very tuff to handle if C# not provide those libraries. But now there is no bug or functionalities error on my system. It's working properly.

Obstacles & Achievements

I learn so many things that are also needed to apply for a job in the real-life marketplace. In this sense I can say that this project helps me to grow and be ready for the market. I always appreciate that working hard is the best policy.

Future Scope

Currently this web-application & WPF tool works on my local machine. In the near future, I will deploy it on AWS server machine, so that it can be maintained easily and scalable via these amazing clouds.

Now this tool uses only windows user, in future I'm also develop this tool for others OS users.

In future I'm using Angular for my front-end framework for user good experience.