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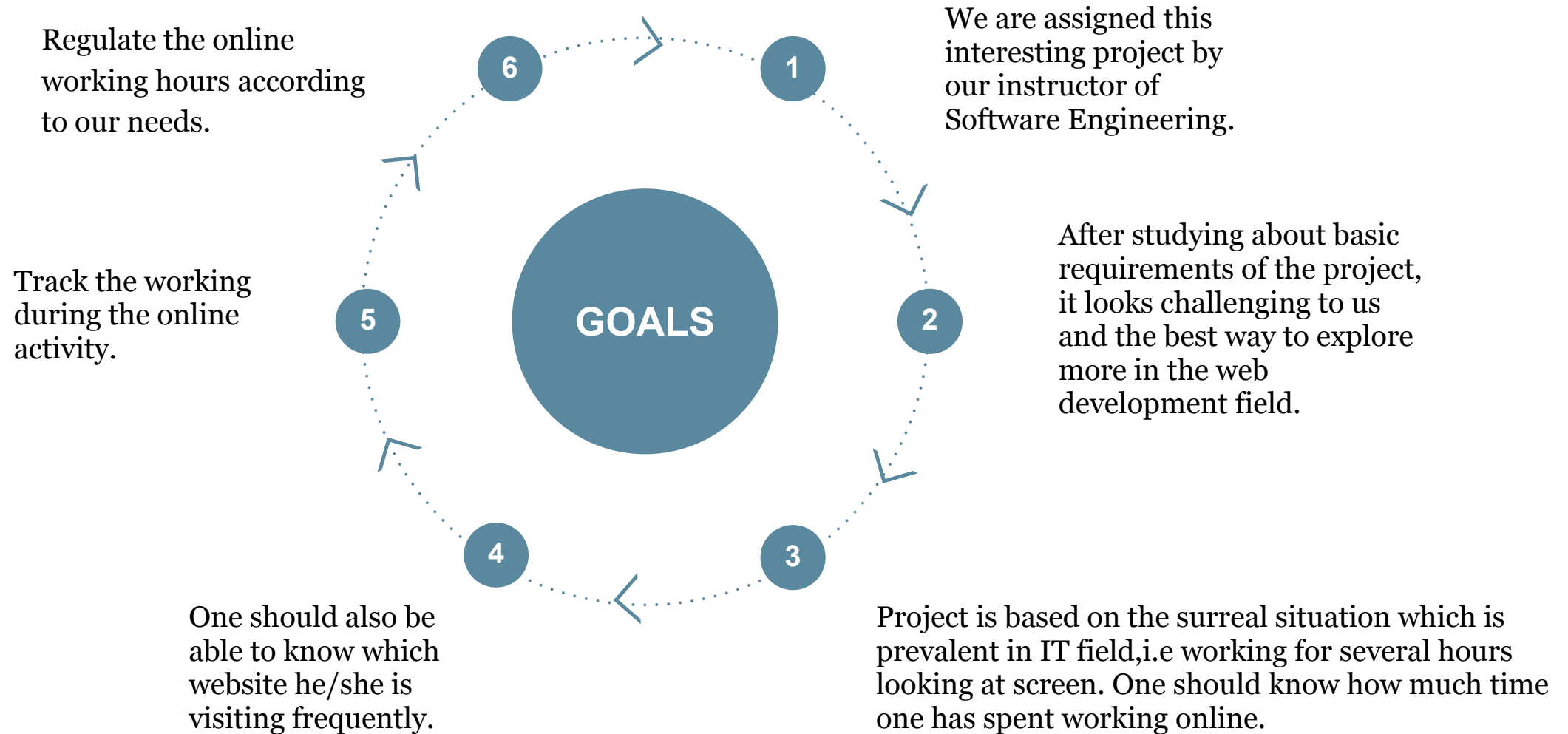


01

INTRODUCTION

All about Web Monitor

MOTIVATION OF PROJECT

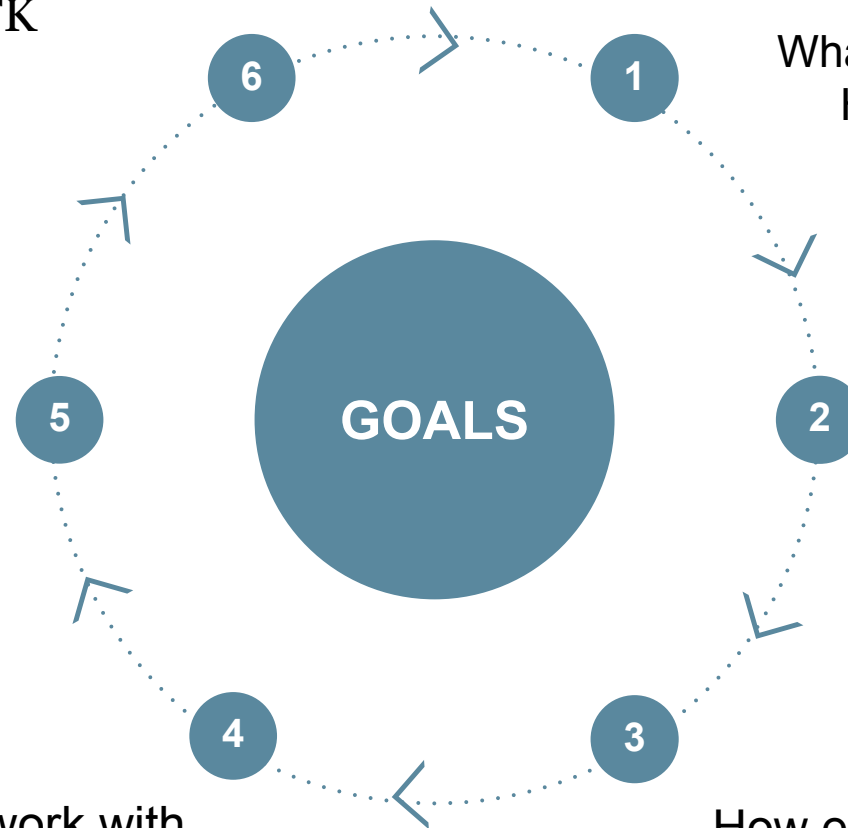


CHALLENGES OF PROJECT

How to implement AFK
time feature ?

How to add
functionalities to
the extension?

How to work with
chrome API's?

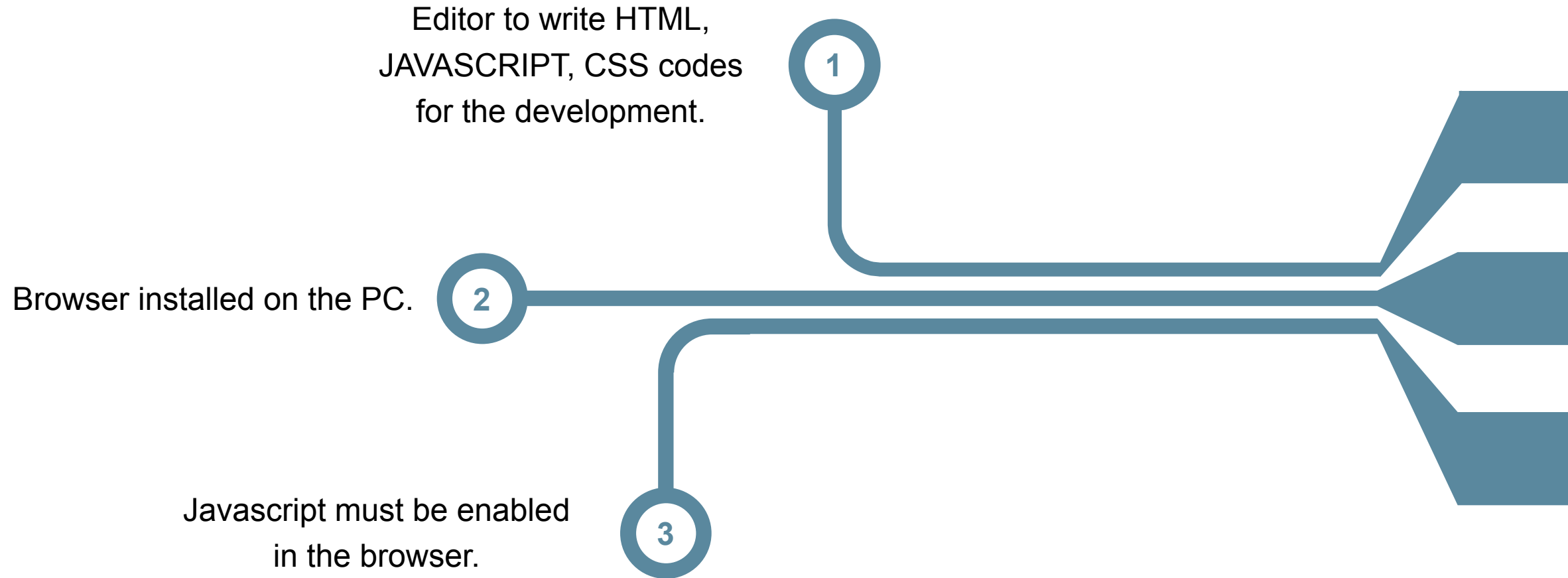


What are extensions?
How they behave ?

How extensions are
developed ?

How extensions
are deployed ?

REQUIREMENTS OF WEB MONITOR



POTENTIAL CUSTOMERS OF WEB MONITOR

Students

Students can track their activity on browser which helps them to organise their study needs and mental health as well.

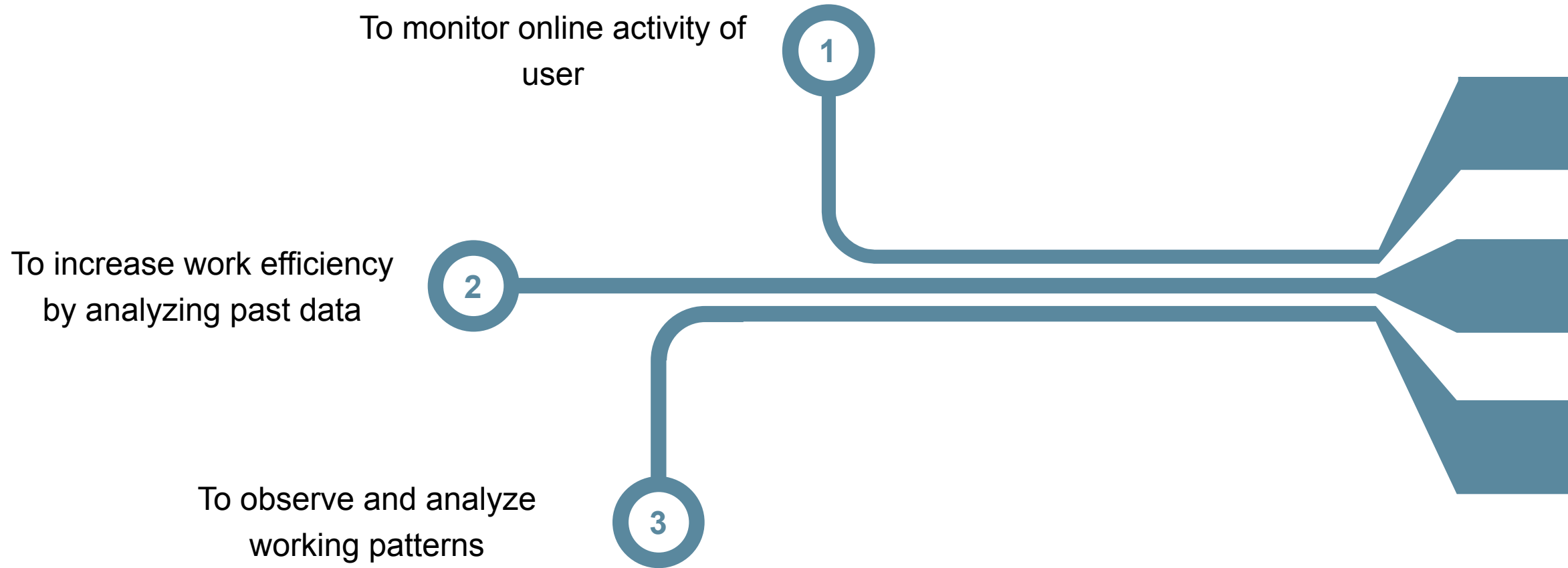
IT Professionals

IT Professionals can track their working hours and can increase their working efficiency.

Others

Others here means anyone who uses browser for surfing over the net. The way it is useful for the students and IT professionals, it would be the same for them as well.

APPLICATIONS OF WEB MONITOR





02

SRS

Software Requirement Specification

CONTENTS



2.1 Overall Description

- a) Product Perspective
- b) Product Functions
- c) User Characteristics
- d) Principal Actors
- e) General Constraints
- f) Assumptions and Dependencies
- g) Use Case Diagram

2.2 Specific Requirements

- a) Functional Requirements
- b) Non Functional Requirements
- c) Hardware Requirements
- d) Software Requirements
- e) Deployment
- f) Design Constraints



02.1

Overall Description

Software Requirement Specification

a) Product Perspective:

“Web Monitor” is aimed to effectively monitor the activities of an individual while he/she is working online either it be a student attending online classes or a person doing his company work, it will help the teacher/manager to monitor their activities. Overall, this application will reduce the trouble of managers/teachers and everyone who want to monitor their employees/students whether they are doing their work effectively or not.

b) Product Functions:

"Web Monitor" supports the following use cases :

Use cases	Description of use cases
Application :	
Access	In order to function properly, it requires some specific permissions by the user.
Functions	Executes all instructions and output results expected to the users
Student/Employee:	
Download Plugin	Allows student/employee to download the plugin.
Add Plugin to their browser	Students need to add the plugin to their browsers.

View Total Online Time	Student/Employee can view the total online time of any student/employee he wishes to.
Switch Mode	Student/employee can switch mode between light and dark.
View Websites Visited during working hours	Student/employee can view the websites visited by any of the student/employee during work hours/online class(or exam).
View No. of times a website is visited	Student/employee can view the how many times they have surfed each websites in the list.
View Percentage of time spent on each website visited	Student/employee can view the percentage of total time time spent on each website in the list.
Download Plugin	Allows student/employee to download the plugin.
Add Plugin to their browser	Students need to add the plugin to their browsers.
View AFK time	Student/employee can view the time spent in the AFK state.
Give feedback	Student/employee can give their feedback based on their experience of using the product which the developer can read.
Set notifications	Student/employee can set notifications if set limit of tracking has reached

Backup and restore data	Student/employee can backup the data and will be able to restore it when they want.
Set inactivity time limit to stop tracking	Student/employee can set limits for inactivity after which tracking will stop.
Clear data	Student/employee can clear the data stored by the product when they want.
Developer:	Student/employee can view the how many times they have surfed each websites in the list.
Give Access	Give Access to the Student/Employee.
Read and reply to users' views	Developer can read the reviews and reply to them.

c) User Characteristics:

The user should be familiar with the basics of plugin and browsing.

d) Principal Actors :

The two principal actors in “Web Monitor” are “Admin” and “Users”.

e) General Constraints:

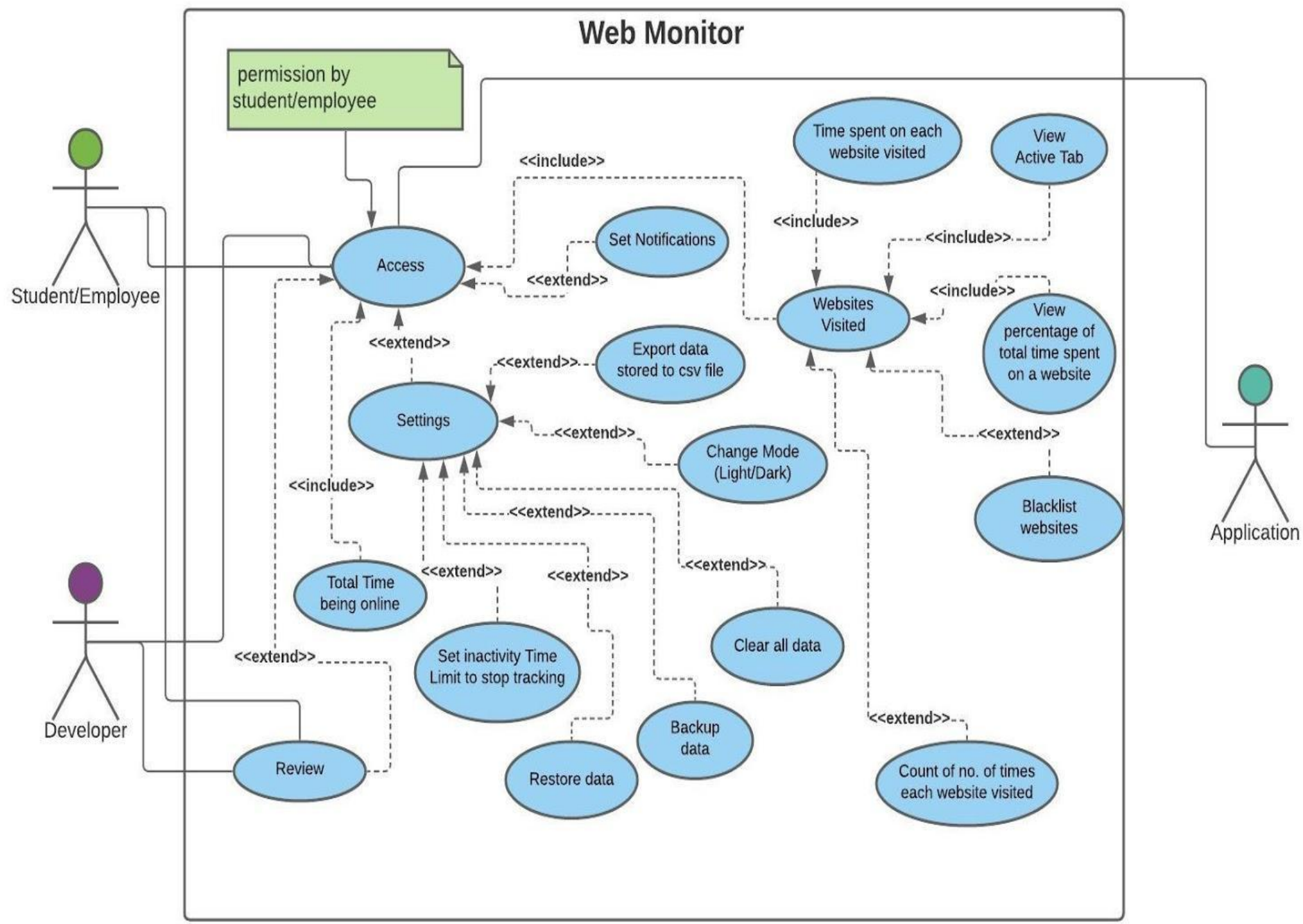
Working of “Web Monitor” requires Internet connection.

“Web Monitor” is a single-user Application. Every student/employee must have this plugin added to their web browser.

f) Assumptions and Dependencies:

- a. Working of “Web Monitor” is dependent on the availability of Internet connection.
- b. Working of “Web Monitor” is also dependent on the fact that students/employees have added this plugin in their web browser.

g) Use Case Diagram





02.2

Specific Requirements

Software Requirement Specification

a) Functional Requirements

Name	Summary	Actors	Precondition/s	Extension	Postcondition/s
Give access to history	Allows user(company/faculty) to access history	Students/Employee	Internet connectivity	Deny permission	User can now access the browser history
Using Storage	Allows application to store the data collected in chromeAPI localStorage.	Application	Internet connectivity	Optional permission	Application can get data from storage and process it to view to the users
View Total Online Time	View students/employees total online time		Internet Connectivity	Tab fails to open due to loss of internet connectivity. An error message is thrown which indicates the same.	Admin can now see the total online time

Name	Summary	Actors	Precondition/s	Extension	Postcondition/s
View Websites Visited	Allows teachers/managers to view the websites which the students/employees visited during online class/work hours.	Faculty/Manager	Internet connectivity	Tab fails to open due to loss of internet connectivity. An error message is thrown which indicates the same.	Faculty/Manager can now see the websites visited
View amount of time spent on a site	Allows teachers/managers to view about time spent by a student/employee on a particular page	Faculty/Manager	Internet connectivity	Tab fails to open due to loss of internet connectivity. An error message is thrown which indicates the same.	Faculty/Manager can now see the amount of time spent on a page

Name	Summary	Actors	Precondition/s	Extension	Postcondition/s
View AFK time	Allows teachers/managers to view about AFK time spent by a student/employee	Faculty/Manager	Internet connectivity	Tab fails to open due to loss of internet connectivity. An error message is thrown which indicates the same.	Faculty/Manager can now see the AFK time spent
Download and add the product	Allows them to download plugins	Student/Employee	Internet connectivity,web browser logged in by organisation provided ids	Deny permission	Student/employee can now download and add the plugin
Access to track specific websites	Give access to track specific websites	Student/Employee	Internet connectivity		Student/Employee can give access to track specific websites

Name	Summary	Actors	Precondition/s	Extension	Postcondition/s
Backup data	backup the data	Student	<ul style="list-style-type: none"> • Internet connectivity. • Database access given 		Student can backup data
Switch Mode	Can view the interface in light or dark mode	Student/Employee	<ul style="list-style-type: none"> • Internet connectivity. • Extension added to the website. 		Students/employee will be experiencing the two modes
View percentage of total time spent on a website	Can View percentage of total time spent on a website	Student/Employee	<ul style="list-style-type: none"> • Internet connectivity. • Extension added to the website. 		Students/employee can View percentage of total time spent on a website

Name	Summary	Actors	Precondition/s	Extension	Postcondition/s
View active tab	Can View active tab	Student/Employee	<ul style="list-style-type: none"> • Internet connectivity. • Extension added to the website 		Students/employee can View active tab
Setting	Can change setting	Student/Employee	<ul style="list-style-type: none"> • Internet connectivity. • Extension added to the website. 		Students/employee can change setting
Set inactivity Time Limit to stop tracking	Can Set inactivity Time Limit to stop tracking	Student/Employee	<ul style="list-style-type: none"> • Internet connectivity. • Extension added to the website. 		Students/employee can Set inactivity Time Limit to stop tracking

Name	Summary	Actors	Precondition/s	Extension	Postcondition/s
Export data stored to csv file	Can export data stored to csv file	Student/Employee	<ul style="list-style-type: none"> • Internet connectivity. • Extension added to the website 		Students/employee can export data stored to csv file
Clear all data	Can Clear all data	Student/Employee	<ul style="list-style-type: none"> • Internet connectivity. • Extension added to the website. 		Students/employee can clear all data
Set Notification	notify the user	Student/Employee	<ul style="list-style-type: none"> • Internet connectivity. • Extension added to the website. 		Students/employee can be notified

Name	Summary	Actors	Precondition/s	Extension	Postcondition/s
Blacklist website	Can block specific website	Student/Employee	<ul style="list-style-type: none"> • Internet connectivity. • Extension added to the website 		Students/employees can block some specific websites
Restore data	restore the data	Student/Employee	<ul style="list-style-type: none"> • Internet connectivity. • Extension added to the website. 		Students/employee can restore data
Count of number of times each website visited	Can have count of number of times each website visited	Student/Employee	<ul style="list-style-type: none"> • Internet connectivity. • Extension added to the website. 		Students/employee can have count of number of times each website visited

Name	Summary	Actors	Precondition/s	Extension	Postcondition/s
Feedback	User can give his/her feedback to the developer	Student/Employee	<ul style="list-style-type: none"> • Internet connectivity. • Extension added to the website 		Students/employee can give feedback to the developer

b) Non-Functional Requirements:

- ☐ For the system to work properly , the plugin must be installed in the web browser of the target audience.
- ☐ Secure access of the confidential data of students/employees to the users i.e faculties/companies.
- ☐ Better component design to take maximum efficiency .
- ☐ Data of the target audiences stored on the local server/cloud is accessible only to the user.
- ☐ No inconsistency with the data being stored.
- ☐ No issue to the users and the target audiences is ensured.

c) Hardware Requirements :

- Requires minimum 4gb ram for smooth functionality of the plugin.
- Processor : Intel Core i3 and above

d) Software Requirements :

- ❖ **Database Server :** Microsoft SQL Server
- ❖ **Client :** Google Chrome
- ❖ **DevelopmentTools :** Microsoft Visual Studio
- ❖ **Programming Language :** C++(or Python)
- ❖ **Scripting Language :** javascript

e) Deployment

Operating system server : Windows 8 and above, UNIX, Linux.

f) Design Constraints :

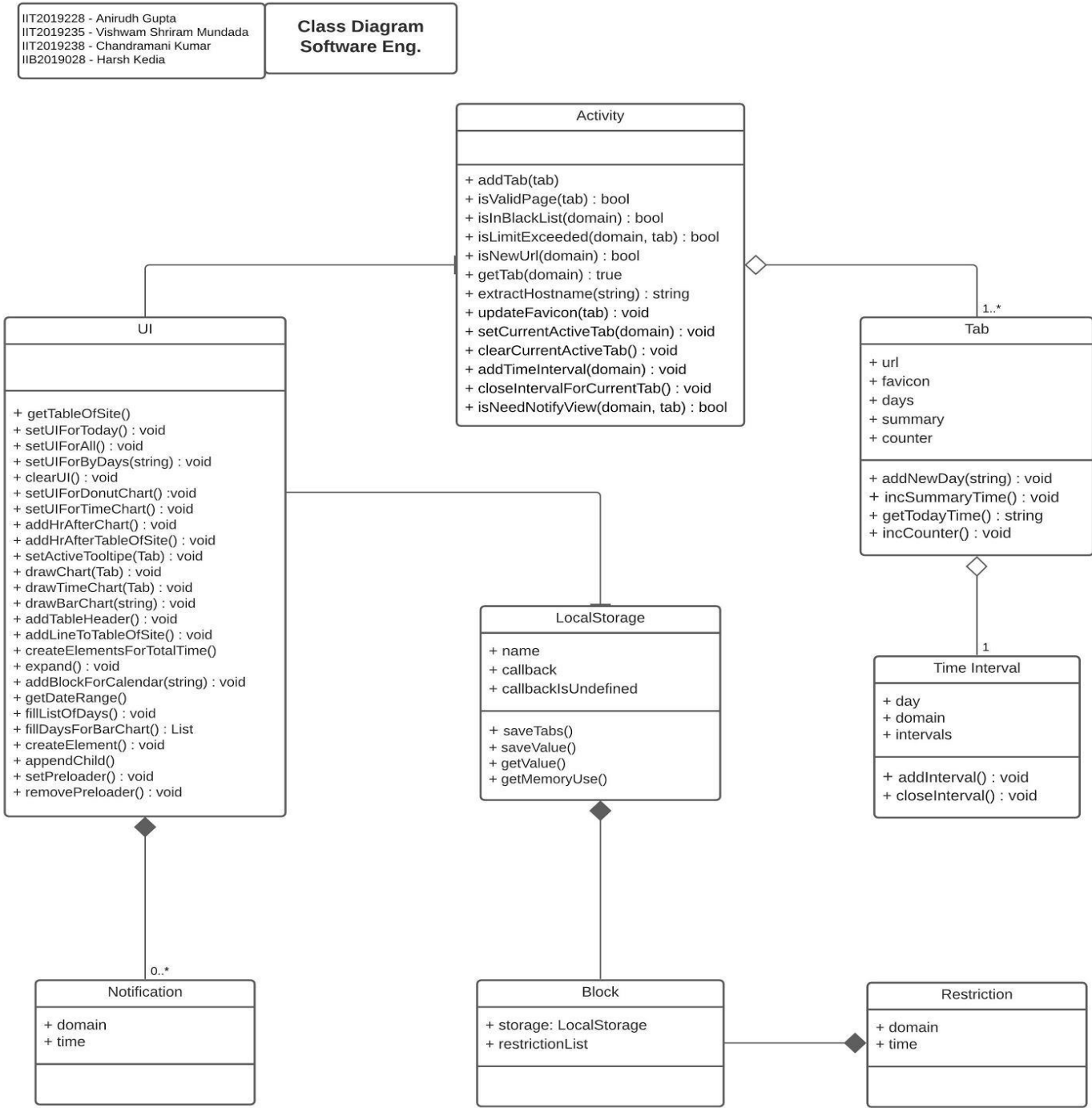
- **Security:** The data storage must be encrypted so that valuable information of the organisation's elements remain secured.
- **Fault Tolerance:** Data should not become corrupted in case of system crash or power failure.



03

SOFTWARE DESIGN SPECIFICATION

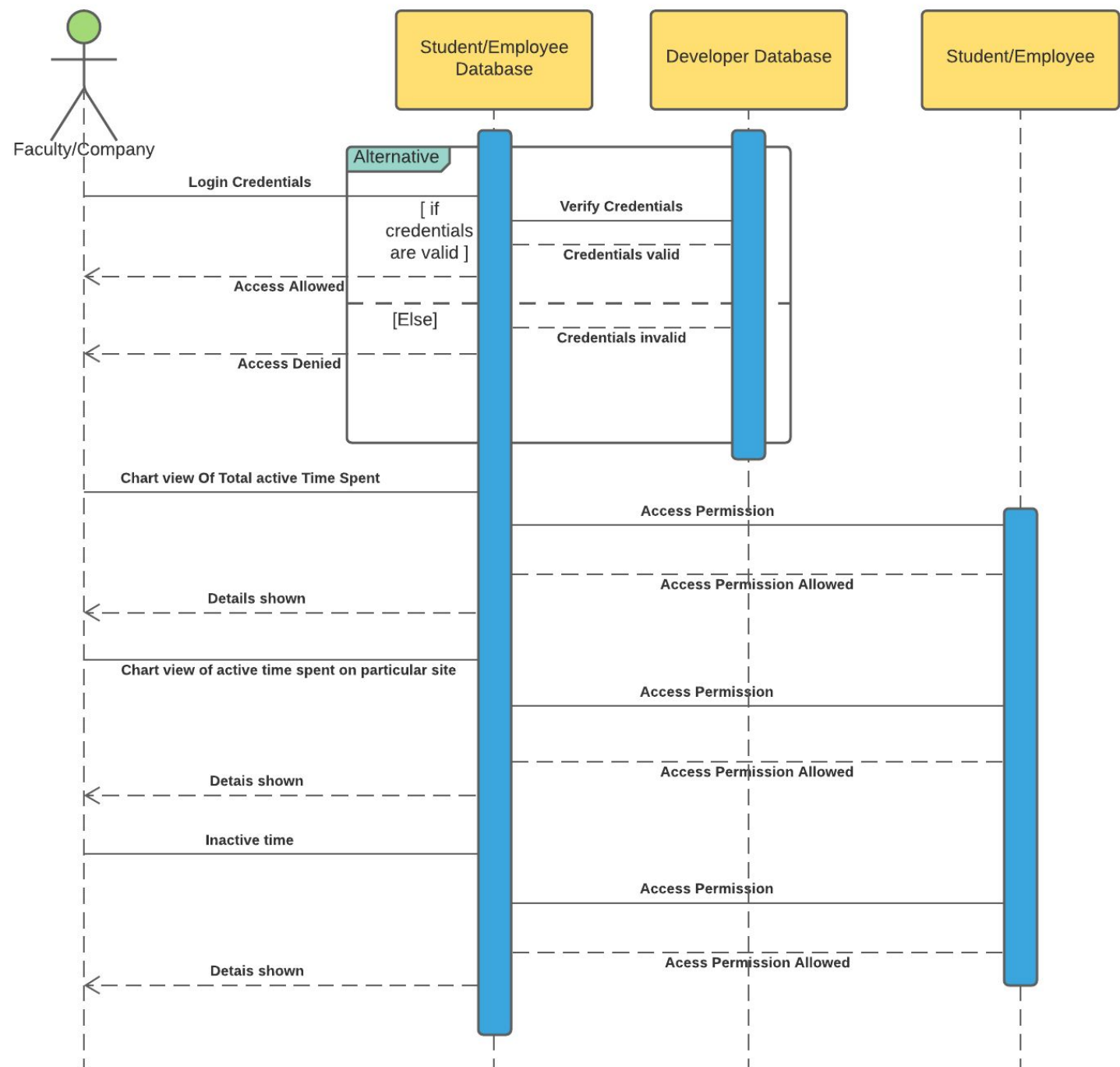
Class Diagram



Class Diagram explanation :

- 1) **Association Relationship** - An association indicates that objects of one class have a relationship with objects of another class, in which this connection has a specifically defined meaning. These are: “UI” and “Activity”, and “UI and Local Storage”.
- 1) **Aggregation Relationship** - Aggregation refers to the formation of a particular class as a result of one class being aggregated or built as a collection. In aggregation, the contained classes are not strongly dependent on the lifecycle of the container. In the same example, books will remain so even when the library is dissolved. To show aggregation in a diagram, draw a line from the parent class to the child class with a diamond shape near the parent class.
The class “Activity” is made up of one or more “Tab”, “Tab” and “Time Interval”
- 1) **Composition Relationship** - The composition relationship is very similar to the aggregation relationship. with the only difference being its key purpose of emphasizing the dependence of the contained class to the life cycle of the container class. That is, the contained class will be obliterated when the container class is destroyed.
These are: “Block” depends on “Local Storage”, and “Block depends on Restriction”

Sequence Diagram

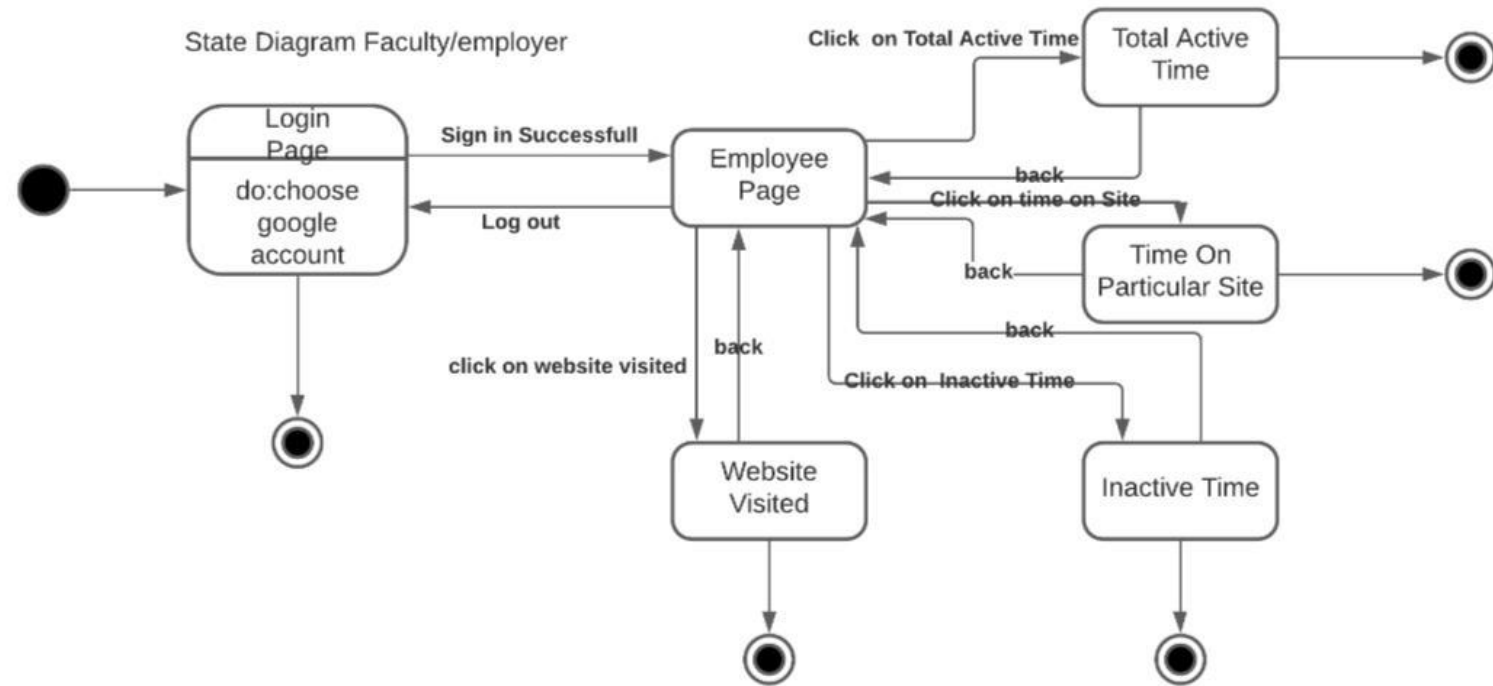


Sequence Diagram :

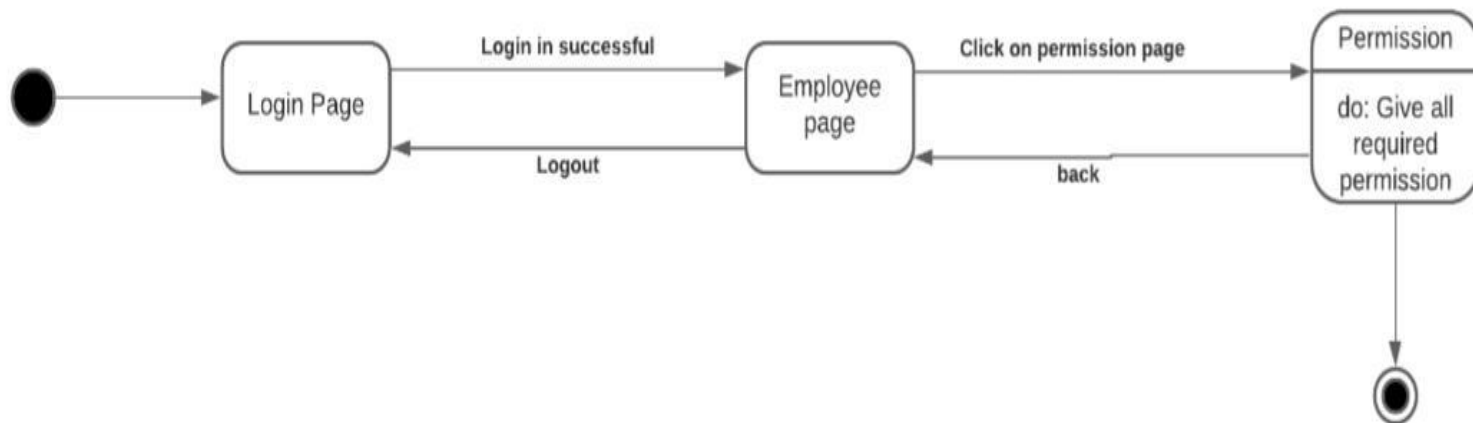
Arrow line signifies there is a send message taken place. Response is being shown by dotted arrows.

1. **Login** : Faculty or employer is able to login into the database server through this page if valid credentials are given . If invalid credentials are given ,then the system asks for entering the credentials again.
2. **Total Active Time** : Faculty or employer is able to view the total active hours of the student/employee during working hours on clicking this button.
3. **AFK Time** : Faculty or employer is able to view the total inactive hours of the student/employee during working hours on clicking this button.
4. **Sites Visited** : Faculty or employer is able to view the sites being visited in the total active hours of the student/employee during working hours on clicking this button.
5. **Pictorial View** : Faculty or employer is able to view the total active hours of the student/employee during working hours in chart view on clicking this button.Each section will be of different websites and time spent on them.

STATE DIAGRAM Of Faculty/Employer



STATE DIAGRAM OF Employee /Student



State Diagram:

Initial state is being shown by starting with a black dot. Final State is being shown by the black dot surrounded by an empty circle.

1) Faculty/Employer: On clicking the Login button on the Login page, it lands on the Employee page. The user can now click on Total Active Time / Time on Particular Website/ Websites Visited/ Inactive Time, or Logout button, which lands up the user to the Login page again.

2) Student/Employee: On clicking the Login button on the Login page, it lands up in the Employee page. On clicking the Permission button, it would again land up Student/Employee on the Permission Page. On clicking the Logout button, Student/Employee lands up to the login page again.



04

SAMPLE SHOTS

Sample screenshots of output of our implemented functionalities.

Shows websites list with following details :

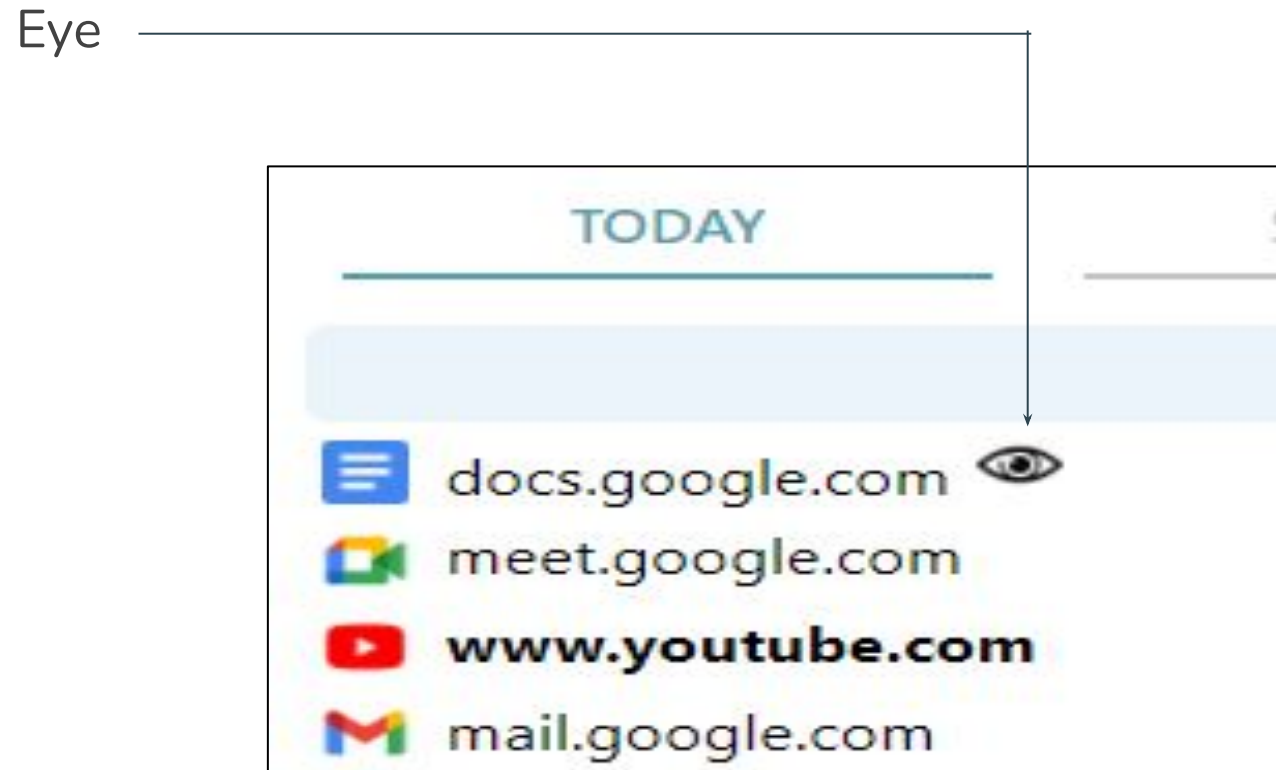
a) URL of the website :

As we can observe in the image that url of the websites visited on a particular day are listed correctly. So this test case succeeds.



b) Active tab : (an eye icon must be there at the end of url of current tab)

As we can observe below in the image that this test case succeeds.



WPS Office domains.csv

Menu Home Insert

Calibri 11

B I U

A2 fx www.geeksforgeeks.org

	A	B	C	D	E	F
1	domain	date	time(sec)			
2	www.geeksforgeeks.org	04-03-2021	437			
3	www.geeksforgeeks.org	04-04-2021	66			
4	www.geeksforgeeks.org	04-05-2021	6			
5	ideone.com	04-03-2021	178			
6	ideone.com	04-04-2021	468			
7	ideone.com	04-05-2021	7			
8	meet.google.com	04-03-2021	996			
9	meet.google.com	04-05-2021	4			
10	mail.google.com	04-03-2021	35			
11	mail.google.com	04-04-2021	148			
12	mail.google.com	04-05-2021	5			
13	github.com	04-03-2021	36			
14	github.com	04-04-2021	188			
15	github.com	04-05-2021	27			
16	www.google.com	04-03-2021	311			
17	www.google.com	04-04-2021	199			
18	www.google.com	04-05-2021	1065			
19	www.definitions.net	04-03-2021	84			
20	www.definitions.net	04-05-2021	5			
21	www.programiz.com	04-03-2021	99			
22	en.wikipedia.org	04-03-2021	66			

domains +

Sum=133378 Average=22229.66667 Count=9

c) Export to csv feature

We can see here that for each website it shows data for all previous days

d) Switch to Dark Mode

☆

0

Web Monitor

TODAY

SETTINGS

Today (201 sites)

www.google.com

44

31.44 %

00h 17m 31s

www.britannica.com

4

1.73 %

00h 00m 58s

www.pinterest.com

8

1.41 %

00h 00m 47s

editorial.rottentomatoes.com

5

1.29 %

00h 00m 43s

www.yatharthgeeta.com

9

1.17 %

00h 00m 39s

www.animalplanet.com

2

1.02 %

00h 00m 34s

www.merriam-webster.com

5

0.99 %

00h 00m 33s

www.hindisahityadarpan.in

10

0.96 %

00h 00m 32s

www.blogger.com

3

0.93 %

00h 00m 31s

iskcondwarka.org

4

0.93 %

00h 00m 31s

en.wikipedia.org

2

0.90 %

00h 00m 30s

earth.google.com

1

0.90 %

00h 00m 30s

www.managementstudyguide.com

3

0.90 %

00h 00m 30s

github.com

3

0.81 %

00h 00m 27s

solapur.gov.in

1

0.81 %

00h 00m 27s

www.google.co.in

3

0.75 %

00h 00m 25s

www.yatra.com

1

0.75 %

00h 00m 25s

www.homecentre.in

6

0.75 %

00h 00m 25s

in.yahoo.com

1

0.72 %

00h 00m 24s

www.codecademy.com

4

0.72 %

00h 00m 24s

www.housebeautiful.com

2

0.72 %

00h 00m 24s

www.railYatri.in

6

0.72 %

00h 00m 24s

- e) Total websites visited
- f) Time spent on each website visited
- g) Count of visits on each website
- h) Percentage share of total time of a website

Count of visits

Percentage share

Time spent on a website








Total Websites Visited

Web Monitor

TODAY

SETTINGS

Today (201 sites)

	www.google.com	44	31.44 %	00h 17m 31s
	www.britannica.com	4	1.73 %	00h 00m 58s
	www.pinterest.com	8	1.41 %	00h 00m 47s
	editorial.rottentomatoes.com	5	1.29 %	00h 00m 43s
	www.yatharthgeeta.com	9	1.17 %	00h 00m 39s
	www.animalplanet.com	2	1.02 %	00h 00m 34s
	www.merriam-webster.com	5	0.99 %	00h 00m 33s
	www.hindisahityadarpan.in	10	0.96 %	00h 00m 32s
	www.blogger.com	3	0.93 %	00h 00m 31s
	iskcondwarka.org	4	0.93 %	00h 00m 31s

i) Feedback

Web Monitor

Settings

Limits

Notifications

About

Feedback

You can support Web Monitor by giving feedback:



Feedback

j) AFK Time

Web Monitor

Your recent AFK time :- 00:06:41

Your total AFK time since you have opened the browser :- 00:24:12

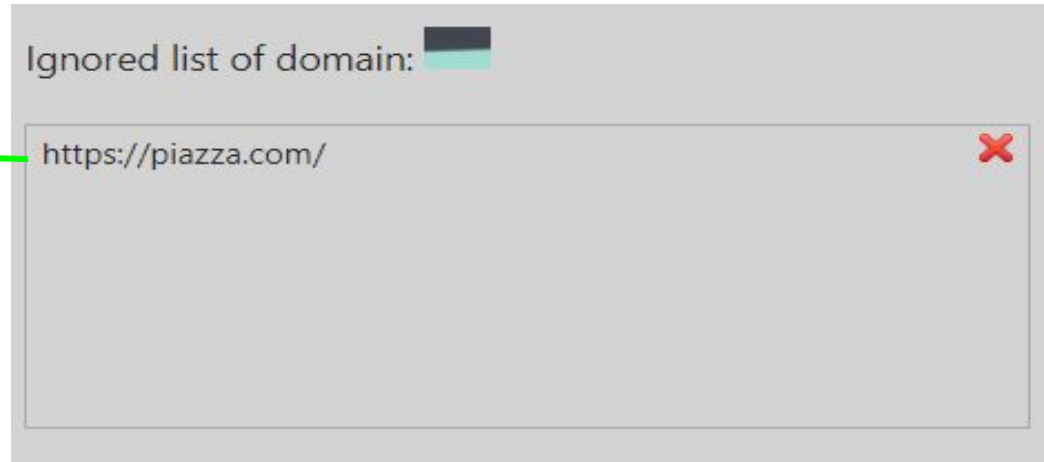
☐ Prevent this page from creating additional dialogs

OK

k) Ignored list of domain

This means that the site in the list is not being tracked by the extension.

Site url to be ignored



Same URL
as it is in
ignored list



n/a signifies that this
site isn't being tracked

l) Limit the access to a site

Access daily restrictions for websites: ?

Enter site name... Time... +

https://piazza.com/ 00h : 01m

List of site URL with its time after which access to it is revoked.

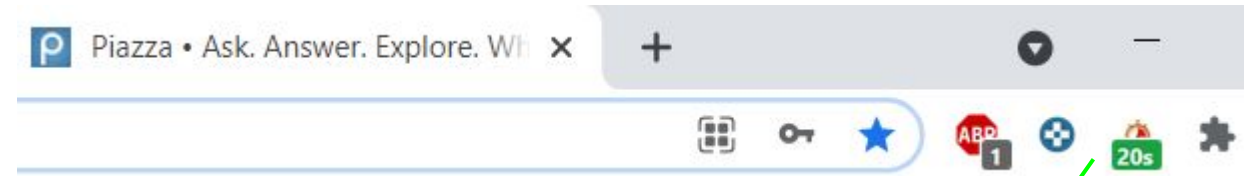
Time has exceeded 1min on the listed URL.

piazza.com

10

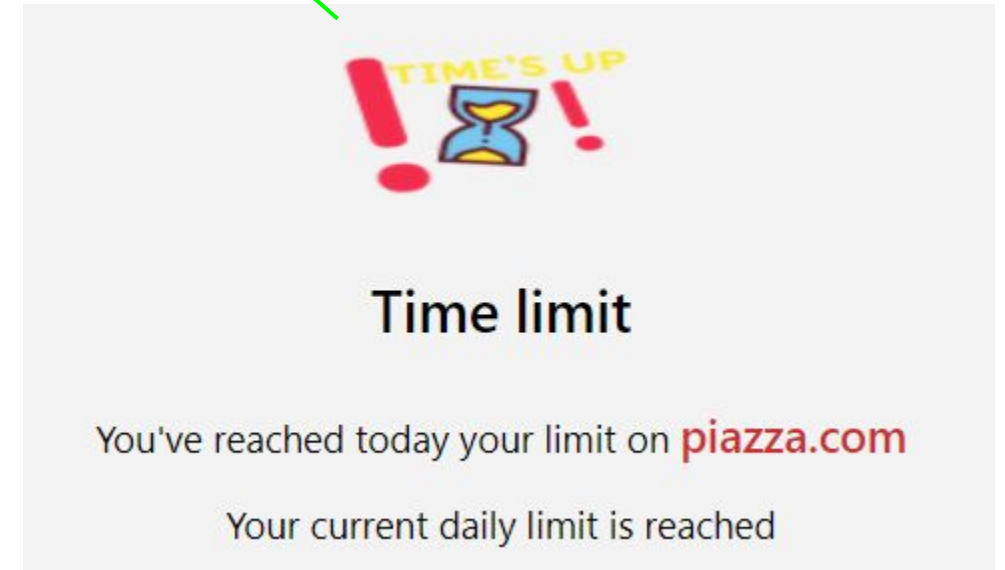
0.69 %

00h 01m 01s



Screen after time exceeds the limit.

Before set limit access is allowed and tracking continues.





05

DEMONSTRATION

Has been recorded.



06

TEST PLAN

Different working circumstances and scalability

Our test plan includes the following :

a) Analyzing the product :

We will be reviewing requirements of the product.

Target audience will be asked for their feedback while using it.

We will be seeing how it will work.

b) Developing Test Strategy :

Scope of testing : We will be looking for Storage testing ,Functional testing.

We will not be doing security testing, hardware testing.

c) Analysing Test Objectives:

We will check that whether extension Web Monitor **functionality** (List of websites visited, active tab, settings, ...) is working as expected without any error or bugs in real business environment.

We will check that the external interface of the website such as **UI** is working as expected and meet the users' need.

We will verify the **usability** of the website. Are those functionalities convenient for user or not?

d)Defining Test Criteria

Suspension Criteria :

We have decided if bug percentage is 20% or above, we will stop testing and fix those bugs in the development.

Exit Criteria :

We have decided 90% as lower cap for error free percentage in the testing report for exiting the testing phase.

e) Testing Environment Setup

We will be installing the extension on chrome.

To do this,we need to enable developer mode in chrome by going to its setting and then loading the unpacked folder web monitor.

Web monitor folder consists of all scripts required that we have developed till that time for testing.

f) Scheduling testing :

We are testing the result of development every week once we started the development work.

g) Delivering the report :

Finally, we as testers will check for which criteria of testing we lie and accordingly we will head forward.

Report

We have tested our product in different environments and results are as follows :

1. We tested Web Monitor for about 250+ websites and it works well.
2. The storage allotment is good enough and it can store data of about 7+ days easily.
3. The backup and restore functions work well for about 250+ websites, so no issues there as well.
4. The CSV export function can export data of 1000+ tabs so no problems there as well.
5. We tested our product on different browsers such as Microsoft Edge and it works well there also.



07

TRACEABILITY MATRIX

Traceability matrix showing all linkage

Traceability Matrix

Requirements

RQ-1 : View total online time of user

RQ-2 : View website visited and time spent on each website

RQ-3 : Store data in Local Storage of chrome

RQ-4 : View how many times each website visited and percentage of time spent on each website .

RQ-5 : Switching mode (light/dark)

RQ-6 : Setting inactivity time limit to stop tracking

RQ-7 : Backing and restoring the data stored by the application

RQ-8 : Clearing all data stored by the application

RQ-9 : User should be able to report issues and give feedbacks

RQ-10 : User should be able to ignore some sites.

RQ-11 : User should be able to set limit to be on a site.

RQ-12 : User should be able to set notifications message and limit of time spent on a site after which he/she will be notified.

RQ-13 : User should be able to get alerted about the AFK state duration in which he/she were.

Requirement ID	Use Case ID	High Level design element	Low level design element-1	Low level design element-2
RQ-1	UC-3	Tracking	TimeInterval, UI	addInterval addTab isNewURL
RQ-2	UC-4, UC-5	Display	TimeInterval, Tab, UI	setUI
RQ-3	UC-2	Storage	LocalStorage	saveTabs, saveValues getTabs, getValues

RQ - 4	UC-11, UC - 20	Statistics	Tab, TimeInterval, UI	incCounter() getPercentage()
RQ - 5	UC-10	Display	UI	setMode()
RQ - 6	UC-14	Tracking	TimeInterval	
RQ - 7	UC-9, UC-19	Storage	LocalStorage	backup()
RQ - 8	UC-16	Storage	LocalStorage	clearAllData()
RQ - 9	UC-21	Feedback		

RQ - 10	UC-18	Storage	LocalStorage	actionAddBlack SiteToList()
RQ - 11	UC-8	Storage	LocalStorage	actionAddRectri ctionToList()
RQ - 12	UC-17	Tracking	TimeInterval	actionAddNotify ToList()
RQ - 13	UC-6	Tracking	TimeInterval	newState()



08

DISTRIBUTION

How we have distributed work among ourselves

Work Distribution

Development

Frontend : Chandramani Kumar
Harsh Kedia

Backend : Vishwam Mundada
Anirudh Gupta

Testing

Major : Harsh Kedia
Contributed by others too.

Thanks

Dev Group

