Software Testing

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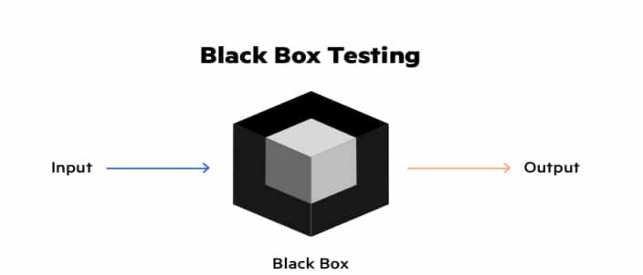
Project Name: Timely.

- **Software Test Case Design Document**

1. Identify unit test cases for all the scenarios

a. Black Box Testing Technique.



Module	Input	Expected Output
Settings (Restrictions)	User sets a daily time limit restriction on a particular website.	For any day if the time limit set by the user is exceeded, then that particular website should be blocked.
Settings (Notifications)	User sets a time limit notification on a particular website.	The notification appears to the user after that much time is spent on that website.
Settings (Theme)	User sets a theme.	The theme should update accordingly
Settings (Ignore List)	User adds a particular website to ignore list.	The website added to the ignore list should not be tracked by the extension.
Web Activity (Graphs)	User wants to see the activity graphs.	The user will be able to see the graphs for ‘Today’, ‘All-Time’, and ‘By-Days’ activity.
Web Activity (Tabular Data)	User want to see time spent for some websites.	The user will be able to see the table containing list of websites and corresponding time spent in decreasing order of their usage.

- ## Explanation of identified unit test cases through examples:

1. **User sets a daily time limit restriction on a particular website.**

    - **Module:** Settings (Restrictions).
    - **Test Case:** For example, a user sets a daily **time restriction of 1 hour** on the **website** ‘www.youtube.com’.
    - **Expected Output:** The website ‘‘www.youtube.com’ would be blocked by the extension. The user will no longer be able to access the website for that day after 1 hour of use.
    - **Possible Error:** The user is still able to access the website after 1 hour of use.

2. **User sets a time limit notification on a particular website.**

    - **Module:** Settings (Notifications).
    - **Test Case:** For example, a user sets a daily notification **time limit of 1 hour** on the **website** ‘www.facebook.com’.
    - **Expected Output:** The extension will show a notification after 1 hour of use to the user. The personalized message in that notification can also be set by the user. It helps user to get notified when the time limit has passed.
    - **Possible Error:** The user is not able to see the notification after 1 hour of use.

3. **User sets a theme.**

    - **Module:** Settings (Theme).
    - **Test Case:** For example, a user updates the theme to **dark mode**.
    - **Expected Output:** The theme gets updated accordingly as specified by the user and changed to **dark** mode.
    - **Possible Error:** The theme of the extension is not updated to **dark mode.**

4. **User adds a particular website to ignore list.**

    - **Module:** Settings (Ignore List).
    - **Test Case:** For example, a user adds the website ‘www.codechef.com’ to the ignore list of domain.
    - **Expected Output:** The extension will not show the tracking details of the website to the user.
    - **Possible Error:** The user is able to see the tracking details of the website.

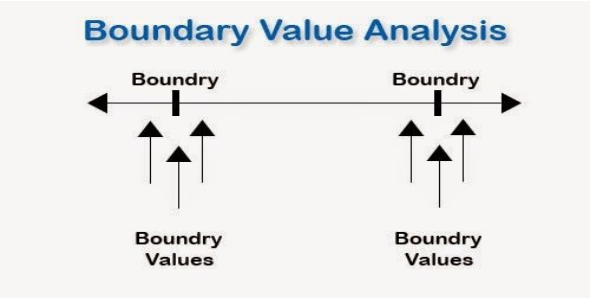
5. **User wants to see the activity graphs.**

    - **Module:** Web Activity (Graphs).
    - **Test Case:** For example, a user wants to see the activity graphs of the tracking summary.
    - **Expected Output:** The extension will display the graph for each ‘Today’, ‘All-Time’, ‘By-days’ tracking data of the user.
    - **Possible Error:** The user is not able to see any of the activity graphs of his tracking summary.

6. **User want to see time spent for some websites.**

    - **Module:** Web Activity (Tabular Data).
    - **Test Case:** For example, a user wants to see the time spent by him/her on the website ‘www.facebook.com’.
    - **Expected Output:** The extension will show a activity table containing time spent by him/her in different websites. In this the user can check the time spent on that particular website.
    - **Possible Error:** The user is not able to see the tracking details of the website in the activity table.

b. Boundary Value Analysis.



1. User sets a daily time limit restriction on a particular website.

Boundary Value Analysis Time (00 hours)		
Invalid (min - 1)	Valid (min, +min, -max, max)	Invalid (max + 1)
min-1 = -1 hour	min = 00 hour, +min = 01 hour, -max = 23 hour, max = 24 hour (only if minutes = 00, else invalid)	max+1 = 25 hour

Boundary Value Analysis Time (00 minutes)		
Invalid (min - 1)	Valid (min, +min, -max, max)	Invalid (max + 1)
min-1 = -1 minutes	min = 00 minutes, +min = 01 minutes, -max = 59 minutes, max = 60 minutes.	max+1 = 61 minutes

2. **User sets a time limit notification on a particular website.**

Boundary Value Analysis Time (00 hours)		
Invalid (min - 1)	Valid (min, +min, -max, max)	Invalid (max + 1)
min-1 = -1 hour	min = 00 hour, +min = 01 hour, -max = 23 hour, max = 24 hour (only if minutes = 00, else invalid)	max+1 = 25 hour

Boundary Value Analysis Time (00 minutes)		
Invalid (min - 1)	Valid (min, +min, -max, max)	Invalid (max + 1)
min-1 = -1 minutes	min = 00 minutes, +min = 01 minutes, -max = 59 minutes, max = 60 minutes.	max+1 = 61 minutes

3. **User sets a theme.**

Boundary Value Analysis Theme 0: White Theme 1: Dark Theme		
Invalid (min - 1)	Valid (min, +min, -max, max)	Invalid (max + 1)
min-1 = -1	min = 0, +min = 1, -max = 0, max = 1.	max+1 = 2

4. **User adds a particular website to ignore list.**

Boundary Value Analysis Count (‘Count’ here determines the number of websites added by the user in the ignore list of domain)		
Invalid (min - 1)	Valid (min, +min, -max, max)	Invalid (max + 1)
min-1 = -1 websites	min = 1 websites, +min = 2 websites, -max = 99 websites, max = 100 websites.	max+1 = 101 websites

c. Equivalence Class Partitioning.

1. User sets a daily time limit restriction on a particular website.

Equivalence Partitioning (Value = hour)		
Invalid Value < 0	Valid Value => 0 and Value <= 24	Invalid Value > 24
Value = -10 hour	Value = 15 hour Value = 20 hour Value = 50 hour	Value = 30 hour Value = 40 hour

Equivalence Partitioning (Value = minutes)		
Invalid Value < 0	Valid Value => 0 and Value <= 60	Invalid Value > 60
Value = -10 minutes	Value = 15 minutes Value = 20 minutes Value = 50 minutes	Value = 65 minutes Value = 70 minutes

2. **User sets a daily time limit notifications on a particular website.**

Equivalence Partitioning (Value = hour)		
Invalid Value < 0	Valid Value => 0 and Value <= 24	Invalid Value > 24
Value = -10 hour	Value = 15 hour Value = 20 hour Value = 50 hour	Value = 30 hour Value = 40 hour

Equivalence Partitioning (Value = minutes)		
Invalid Value < 0	Valid Value => 0 and Value <= 60	Invalid Value > 60
Value = -10 minutes	Value = 15 minutes Value = 20 minutes Value = 50 minutes	Value = 65 minutes Value = 70 minutes

3. **User want to see time spent for some websites in form of tabular data**.

Equivalence Partitioning (Value = percentage usage shown in activity table)		
Invalid Value < 0	Valid Value => 0 and Value <= 100	Invalid Value > 100
Value = -1 %	Value = 50% Value = 70% Value = 95%	Value = 120% Value = 110%

Equivalence Partitioning (Value = sum of percentage usage of all used sites in activity table)		
Invalid Value < 100	Valid Value = 100	Invalid Value > 100
Value = 99 %	Value = 100	Value = 120% Value = 110%

4. **User sets a theme**

Equivalence Partitioning (Value = Theme (0,1)) 0: White Theme 1: Dark Theme		
Invalid Value < 0	Valid Value >= 0 and Value <= 1	Invalid Value > 1
Value = -1	Value = 0 Value = 1	Value = 2 Value = 3

5. **User adds a particular website to ignore list.**

Equivalence Partitioning (Value = Count) ('Count' here determines the number of websites added by the user in the ignore list of domain)		
Invalid Value < 0	Valid Value >= 0 and Value <= 100	Invalid Value > 100
Value = -10 websites	Value = 15 websites Value = 20 websites Value = 50 websites	Value = 105 websites Value = 150 websites

2. Identify integration test cases for all the modules.

Description	Input	Expected Output
Passing tracked sites list to charts module to prepare a chart	User sees a graph	Chart has recieved data properly and created graphs accordingly(data is not lost)
No. of websites in tracked list	User sees activity table	CreateTable() function has received the same no. of sites which were tracked(it is not lost or changed)
Communiation between changeTheme() and user input	User sets a theme.	The theme should update accordingly(as set by user)
Passing Ignorelist of website to tracking function	User adds a particular website to ignore list.	Tracking function should be ignore the sites and not include them in analysis
Passing restriction list of website to tracking and restricting function	User wants to see the activity graphs.	Restriction list has been passed successfully and user is getting restricted for those sites accordingly
Passing data of notification website list to notifying function	User want to see time spent for some websites.	Data of notification list has been passed to notifying function correctly(No data manipulation or missing)

- ## Explanation of identified integration test cases.

1. **User sees a graph.**

   Description: Passing the tracked sites list to the charts module to prepare the charts.

   Expected Output: The user is able to see the analytics graph properly in the extension.

   Possible errors: The list containing the sites tracking information is not passed properly to charts module.

2. **User sees activity table.**

   Description: No. of websites in tracked list.

   Expected Output: The user is able to see the analytics tabular data clearly in the extension table.

   Possible errors: The list containing the sites tracking information is not passed properly to charts module.

3. **User sets a theme.**

   Description: Communiation between changeTheme() and user input.

   Expected Output: The user is able to see the updated theme in the extension.

   Possible errors: The changeTheme() is not called properly and hence the theme didn’t updated accordingly.

4. **User adds a particular website to ignore list.**

   Description: Passing Ignorelist of website to tracking function.

   Expected Output: The user is not able to see the tracking details of the websites present in the ignore list.

   Possible errors: The ignore list of websites is not passed properly and hence the extension shows the tracking summary of ignore list of domains as well.

5. **User wants to see the activity graphs.**

   Description: Passing restriction list of website to tracking and restricting function.

   Expected Output: The user is not able to access the websites present in the restriction list.

   Possible errors: The user is able to access the websites present in the restriction list.

6. **User want to see time spent for some websites.**

   Description: Passing data of notification website list to notifying function.

   Expected Output: The user gets the notification when he spends the time limit set by him/her on that particular website.

   Possible errors: The user is unable to get the notification after the set time has been passed for a particular website.