Department of Computer Information Science

285 Software Engineering Tools

University of Michigan – Dearborn

Term Project

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Functional Requirements:

1. E-Guard will allow parents to monitor their children's web activity, keystroke, chat, email, Instant Messenger, and launched application
2. The launched applications will be associated with the device E-Guard is installed on.
3. E-Guard will maintain a local database of safe and hazardous websites along with updating the database with the remote server daily. The remote server will be maintained by a 3rd party vendor who'll add and update hazardous websites.
4. The 3rd Party vendor will create and maintain the remote server. Our goal will be to copy the database to the local drive on a daily basis.
5. E-Guard will block inappropriate and dangerous websites.
6. E-Guard will delete inappropriate terms from the search engine.
7. The 3rd party vendor will create and maintain the list of common dangerous and inappropriate terms.
8. When there is a suspicious activity like browsing an inappropriate or dangerous website, the E-guard system will take a screenshot.
9. Parents will be allowed to configure the E-Guard software to their choosing. The configurable settings will include settings such as blacklist and whitelisting websites.
10. The configuration settings can control keywords, internet usage time, and categories to be blocked which will be created and maintained by the 3rd party vendor.
11. Security measures include configuration and uninstall actions be restricted to authorized users only.

Non-Functional Requirements:

1. Usability: The E-Guard will allow parents the option to change color interface to either light or dark mode.
2. Serviceability: The E-Guard will offer a 24/7 technical support for any operational and functional issues.
3. Maintainability: E-Guard will have a warranty for technical support for at least one year.
4. Capacity: The 3rd party vendor will keep a long list of bad websites stored in their database

Use case Diagrams:

Parent Checks Activity:

System Requirement Steps:

Name: Web Activity

Participating Actor: Parent

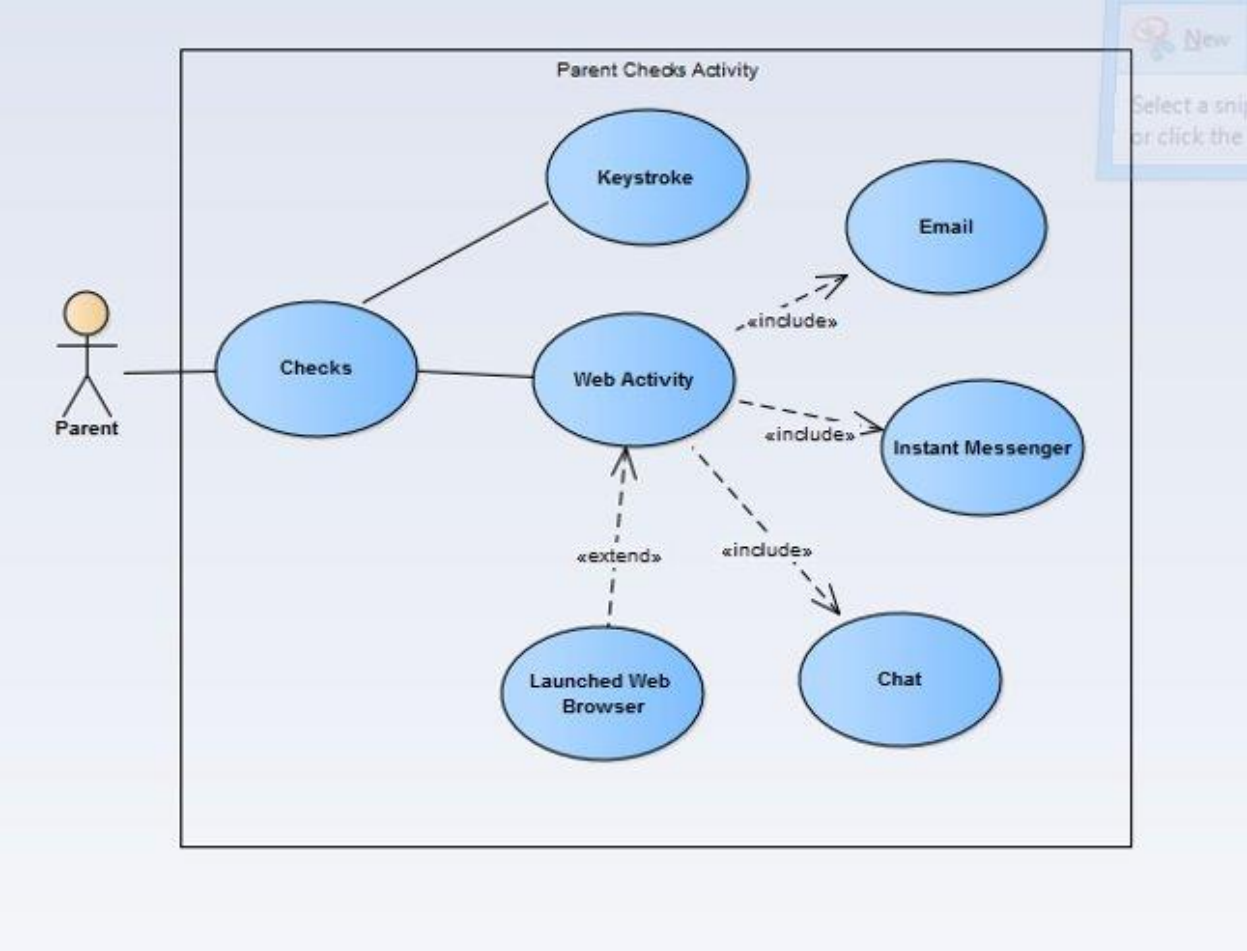
Entry Conditions: Parent decides to Check child's web activity

Use Case Exit Conditions:

1. User will not be able to go anonymous
2. User cannot remove website activity logs
3. Parent exits activity

Event Flow:

1. The user will first log onto the computer
2. The user will then decide on its web browser (Assuming the user is automatically connected to the internet)
3. The user will then search the internet
4. The user will be able to search any website
5. The user will exit the web application
6. E-Guard will save the users history and web activity
7. There will be 2 files generated: 1) Safe Websites visited. 2) Unhealthy websites visited
8. E-guard will determine whether a website is safe or not
9. E-guard updates their database
10. E-guard sends parents the user’s activity log and keystrokes by email
11. The parents will receive the email and view the logs



Child Logs in Computer:

System Requirement Steps:

Name: Logs in

Participating Actor: Child

Entry Conditions: Child turns on computer and attempts to log in

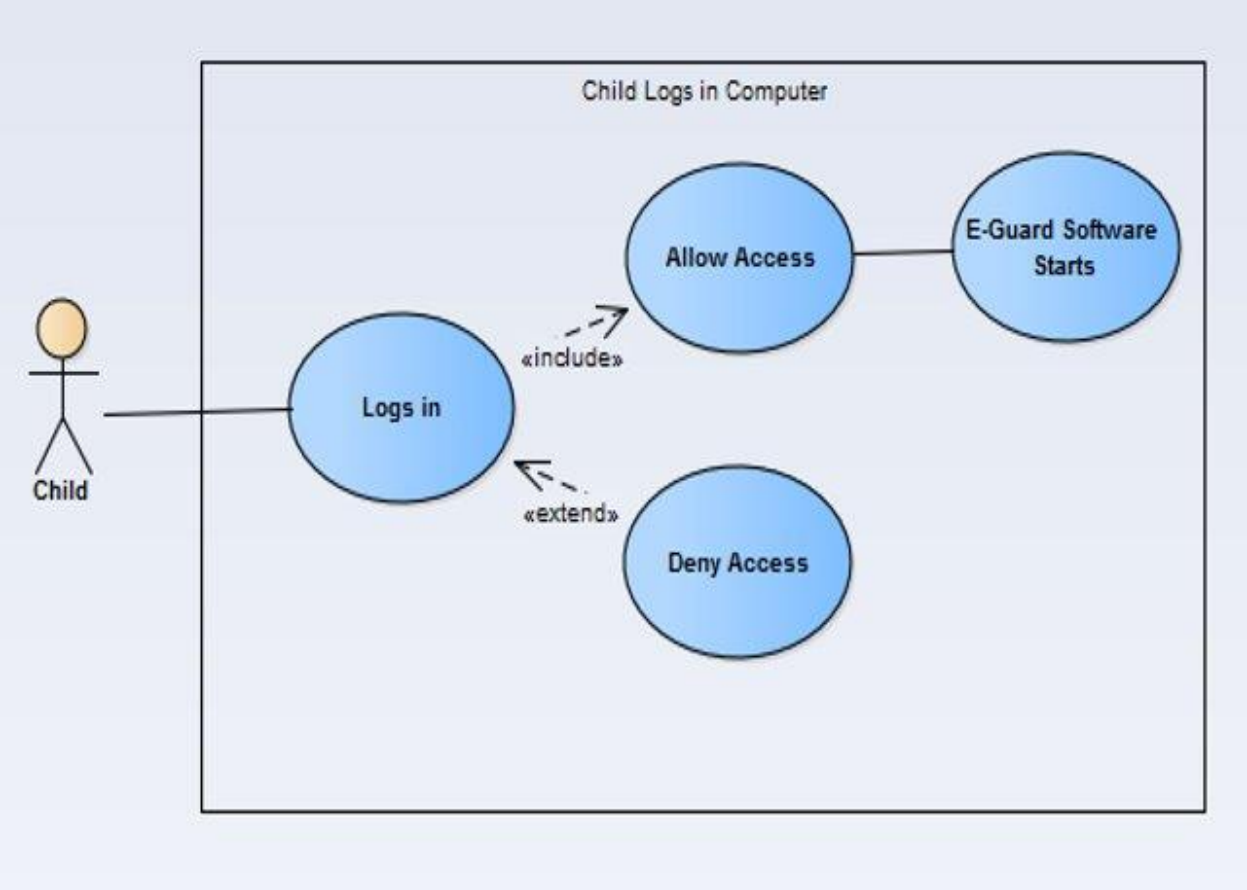
Use Case Exit Conditions:

1. Child successfully logs on computer and E-Guard software will automatically load.
2. Child fails to log on computer

Event Flow:

1. Child will turn on computer
2. Child will have a welcome screen and enter in his/her password

3. If password is incorrect, user will need to re-enter password
4. If successful, the E-Guard software will successfully load



Parent Configures Settings:

System Requirement Steps:

Name: Settings Configuration

Participating Actor: Parent

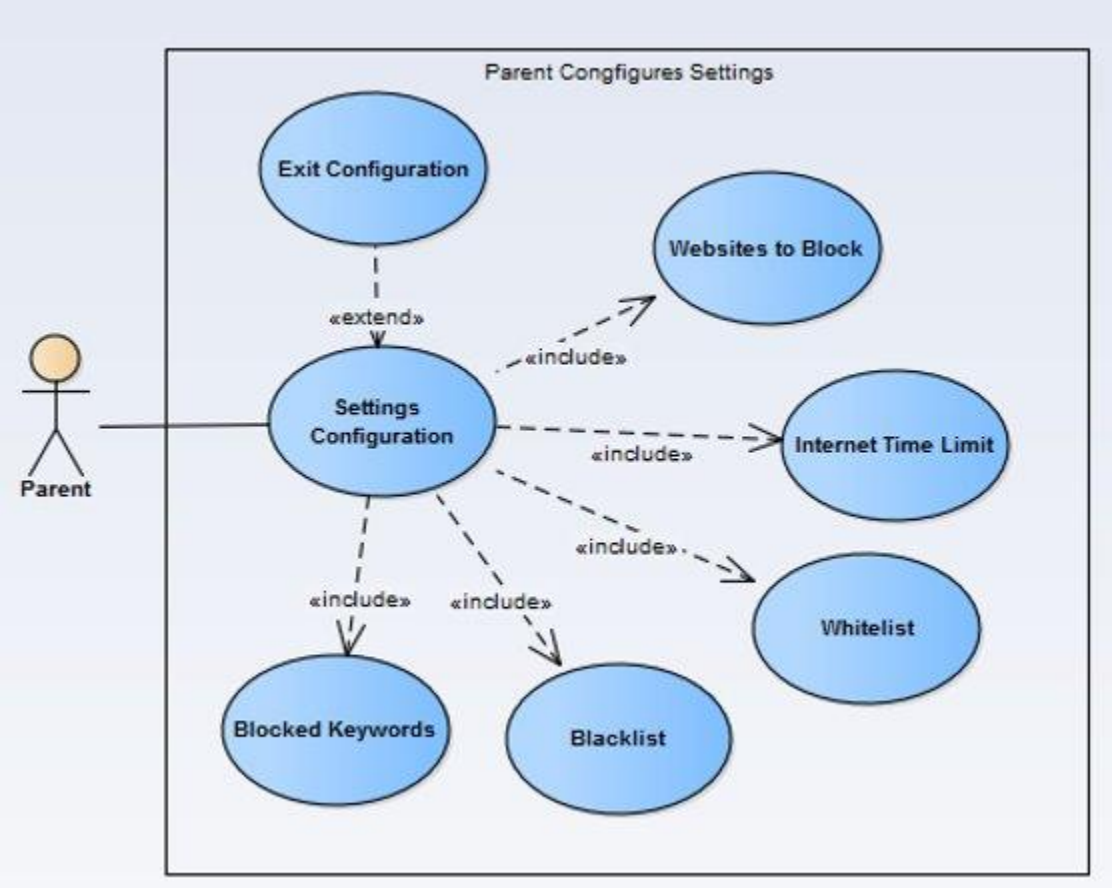
Entry Conditions: Parent selects the Settings Configuration in the user interface

Use Case Exit Conditions:

1. User selects "Exit Configuration"
2. User closes the program

Event Flow:

1. Parent selects settings configuration from the user interface
2. Parent chooses to block certain keywords
3. Parent chooses to blacklist certain applications/websites
4. Parent chooses to whitelist websites that were blocked by the vendor
5. Parent chooses a time limit the child can use the computer for
6. Parent blocks certain keywords entered in the system
7. Parent blocks certain websites
8. User exits configuration



E-Guard Local Database:

System Requirement Steps:

Name: Access Local Database

Participating Actor: Parent, 3rd Party Vendor

Entry Conditions:

1. Parent accesses local database to check notification, snapshots, and blocked websites
2. 3rd party vendor accesses database to make some updates

Use Case Exit Conditions:

1. Parent exits program
2. 3rd party vendor completes the updated list

Event Flow:

1. Parent Accesses local database

2. Parent looks at the notification received by E-Guard regarding the child's activity.

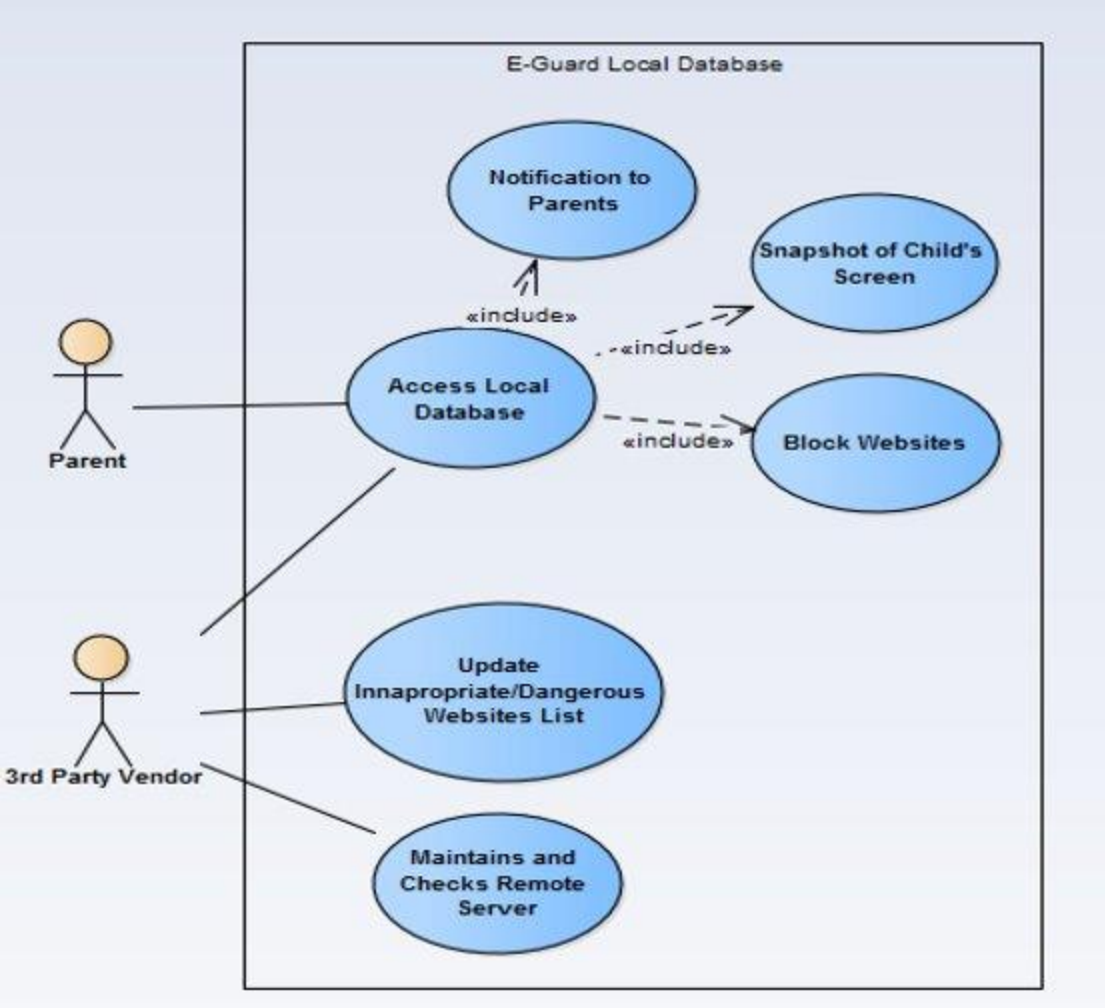
3. Parent looks at snapshot of child's activity that Eguard captured

4. Parent manages blocked websites

5. 3rd party vendors accesses local database

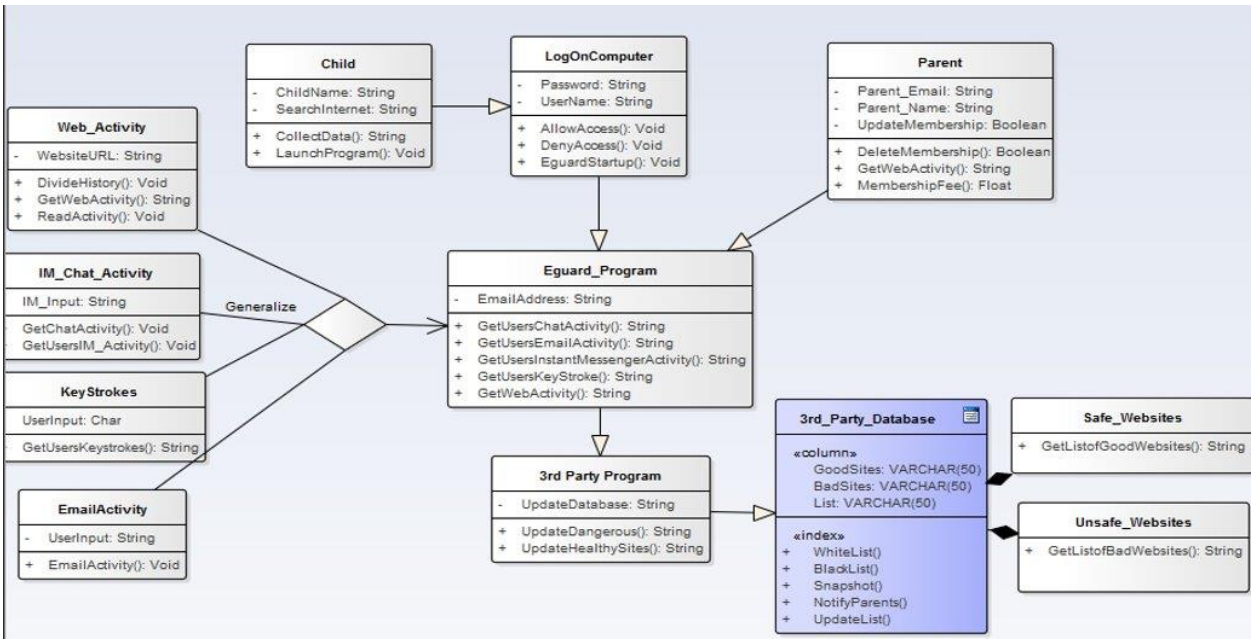
6. Vendor updates the list of inappropriate and dangerous website list

7. 3rd party vendor maintains and checks remote server


E-Guard Local Database
Notification to Parents
Snapshot of Child's Screen
«include»
«include»
Access Local Database
«include»
Block Websites
Parent
Update Innapropriate/Dangerous Websites List
3rd Party Vendor
Maintains and Checks Remote Server

Class Diagram:

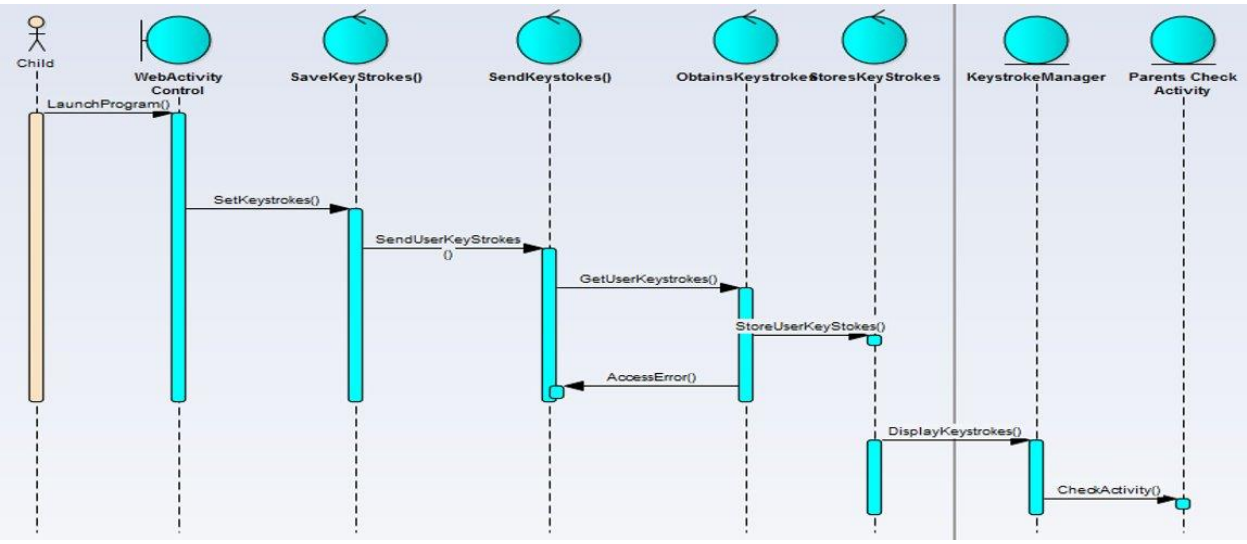
The class diagram gives an overall view of how the system, objects, users, and database who will interact with one another. Each connection correlates with which class is dependent on the other.



Sequence Diagram:

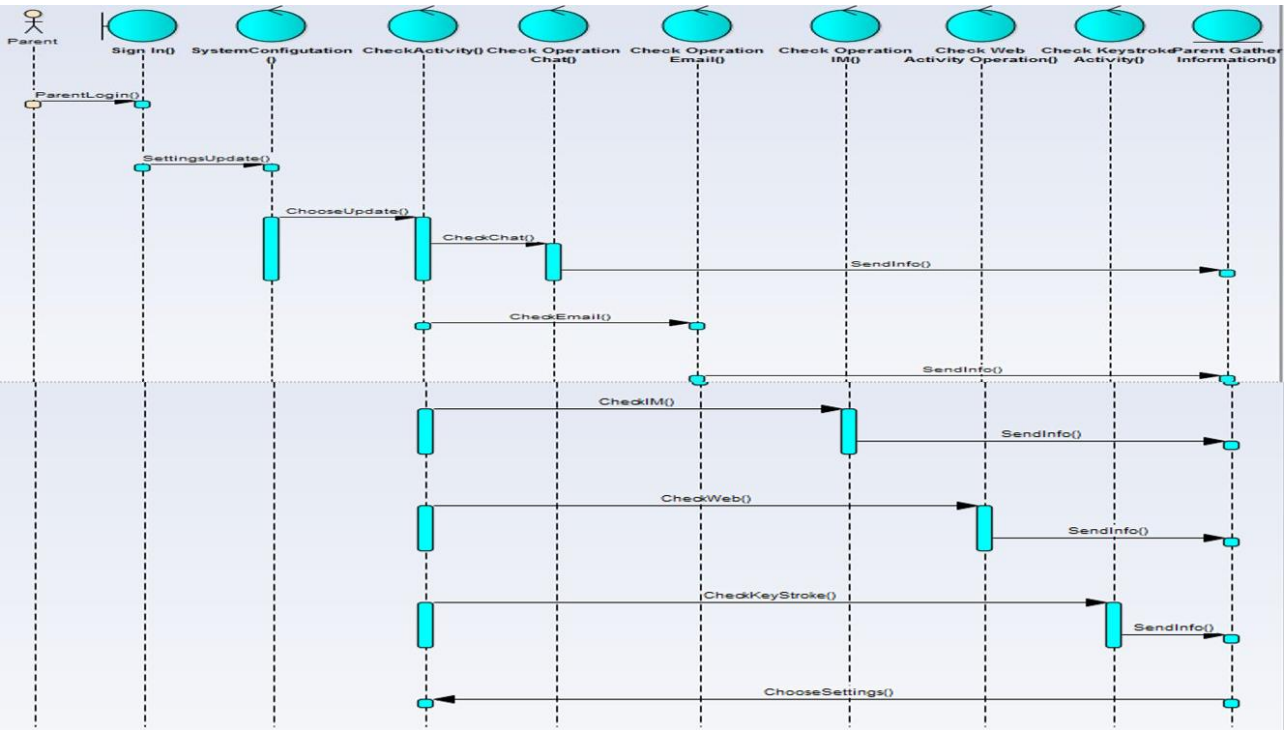
Child Web Activity

The sequence diagram will begin once the child successfully logs on the computer. Once the child logs on, the E-Guard software will automatically run. The E-guard software will save the child's keystrokes, and store them in E-Guard. Once E-guard successfully obtains the keystrokes, they will be able to display the results to the parents.



Parent Signs in E-Guard

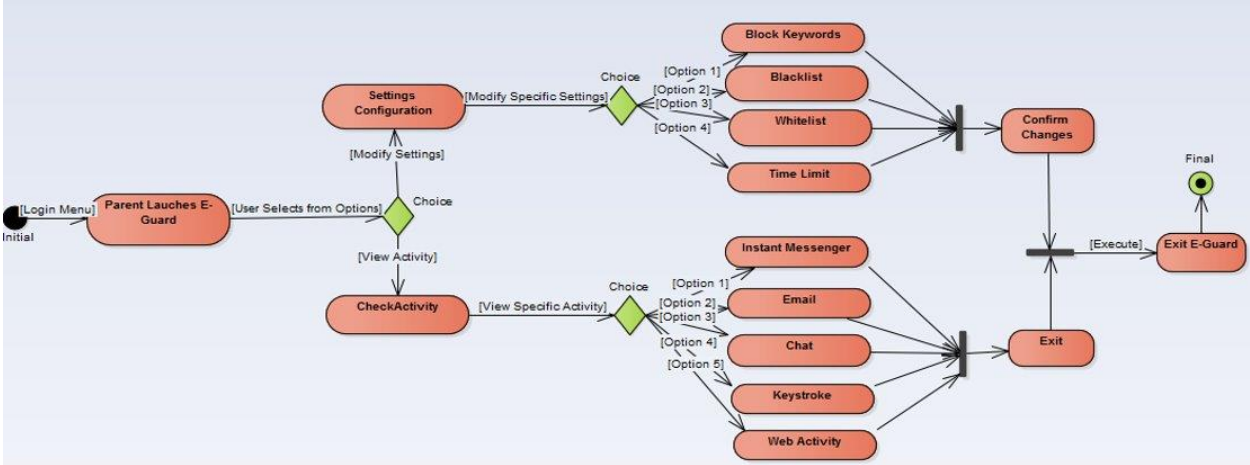
This scenario will begin once parents sign in to the E-guard Software. The parent will then have the option to check certain activities that the child has done. Activities will include viewing chat, email, IM, keystroke, and web activity.



State Diagram:

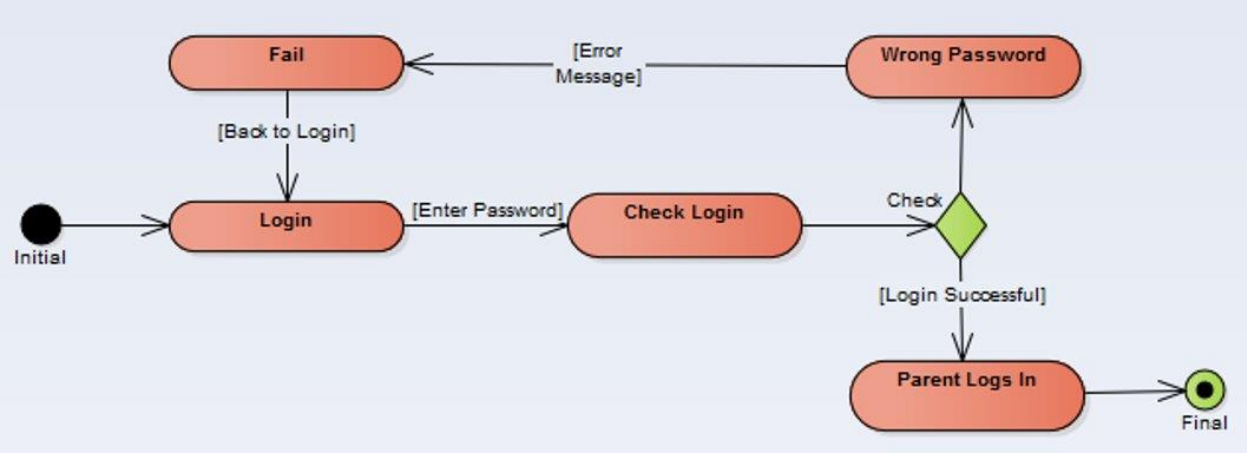
Parent Launches E-Guard

When the program is launched, parent will have two options: check child's activity, or modify the settings configuration. If the parent selection settings configuration, they will be able to modify blocked keywords, blacklist and whitelisted websites, along with setting a time limit for internet usage. The parent can also check the child's activity such as IM, chat, email, keystroke, and web activity.



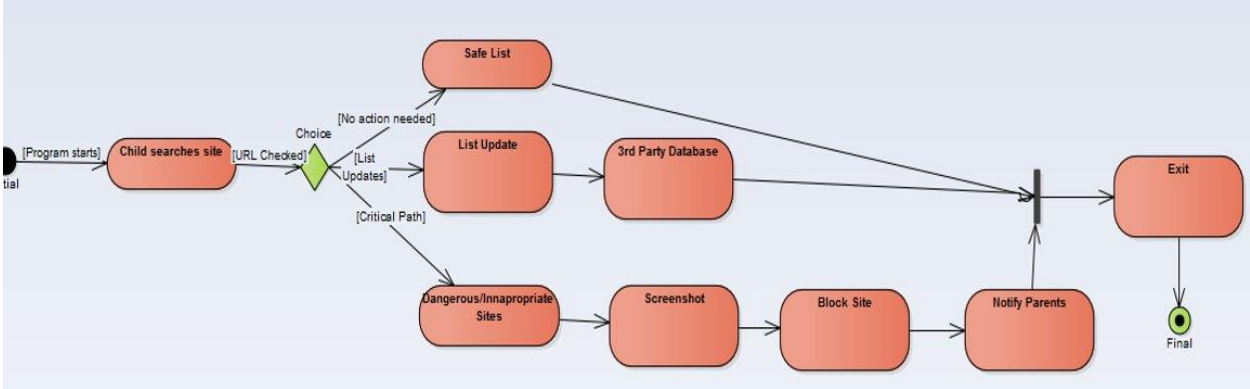
Login to E-guard

This activity diagram displays when a parent attempts to log in to e-guard. If they fail entering the passcode, they will be prompted to re-enter password. If parent enters correct password, they will successfully log on e-guard.



Child Searches Questionable Site

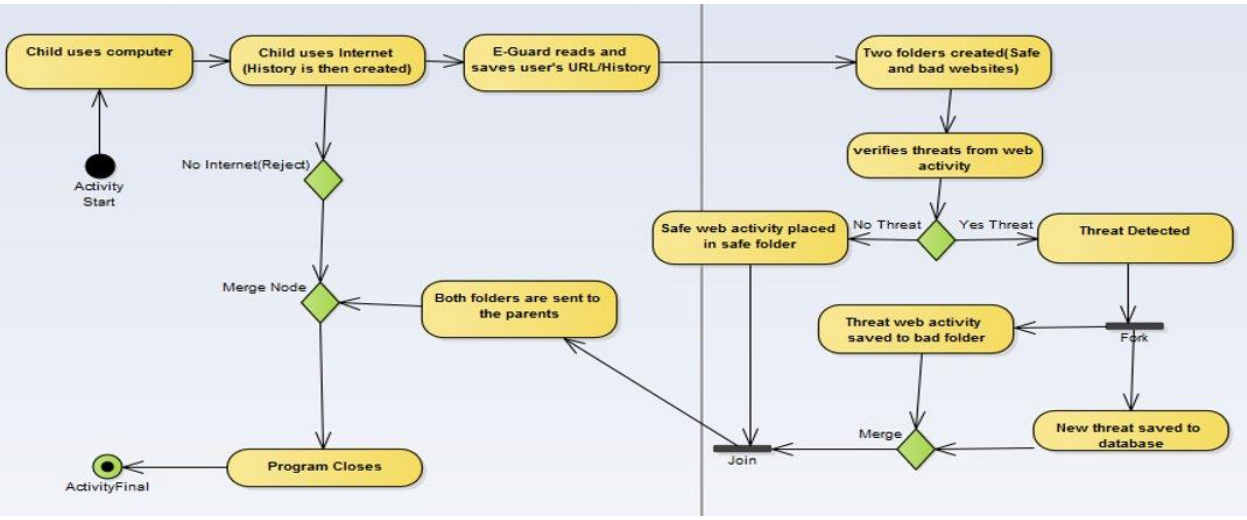
When a child accesses a questionable site, e-guard will check its database through a 3rd party server. The third party server will check and verify the URL and determine whether it is either inappropriate or safe.



Activity Diagram:

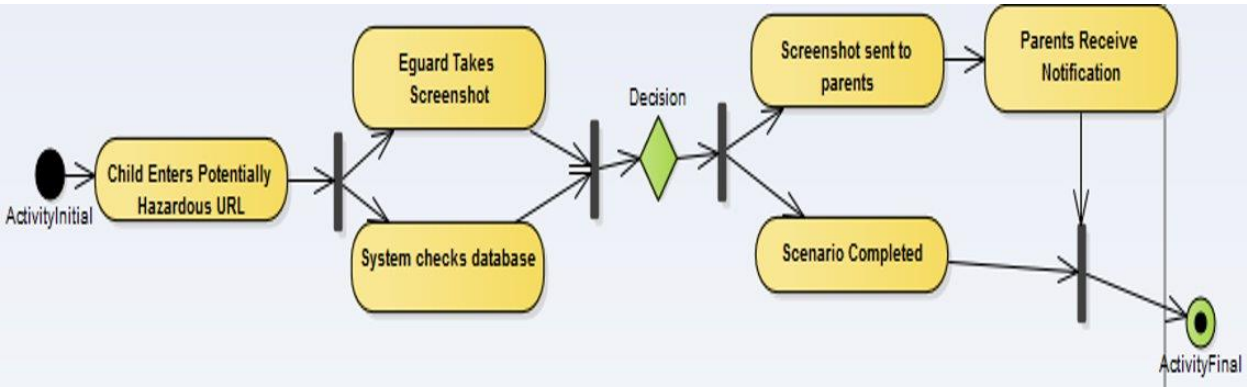
Child Surfs internet

This activity diagram will begin once the child begins searching the internet. As the child uses the computer, a record of their history will be saved by e-guard. E-guard will have two folders that have records whether the child is accessing a safe website or hazardous. If there is a threat detected that is not on the database, the new threat will be saved to the database. If there is not threat, the system will keep a record of the URL the child visited. Once the child has finished using the computer, the record will be stored into E-guard for the parents to check the results of their choosing.



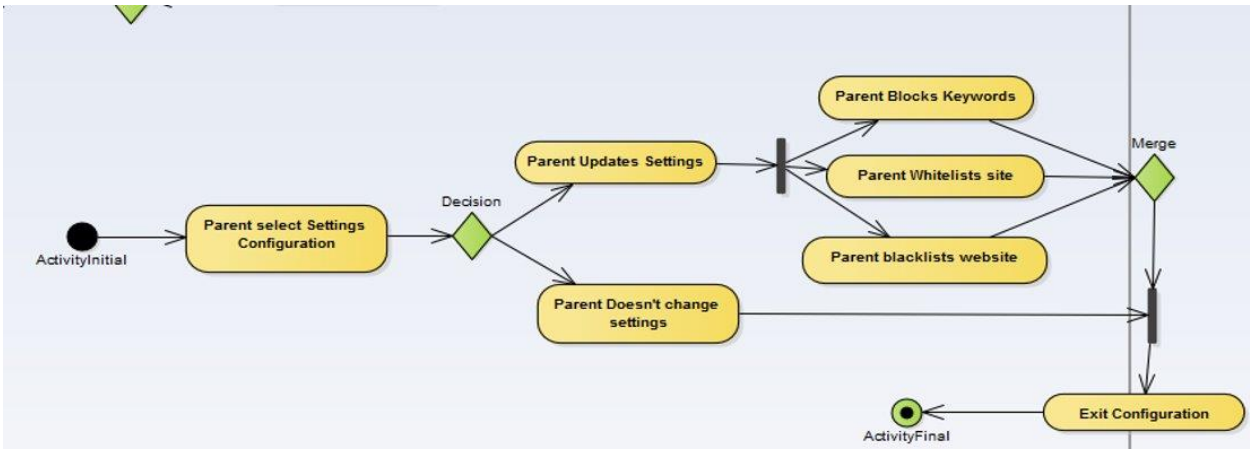
E-Guard checks URL

When a child accesses a hazardous URL, E-guard will take a screenshot and notify the parents that their child has accessed an inappropriate site.



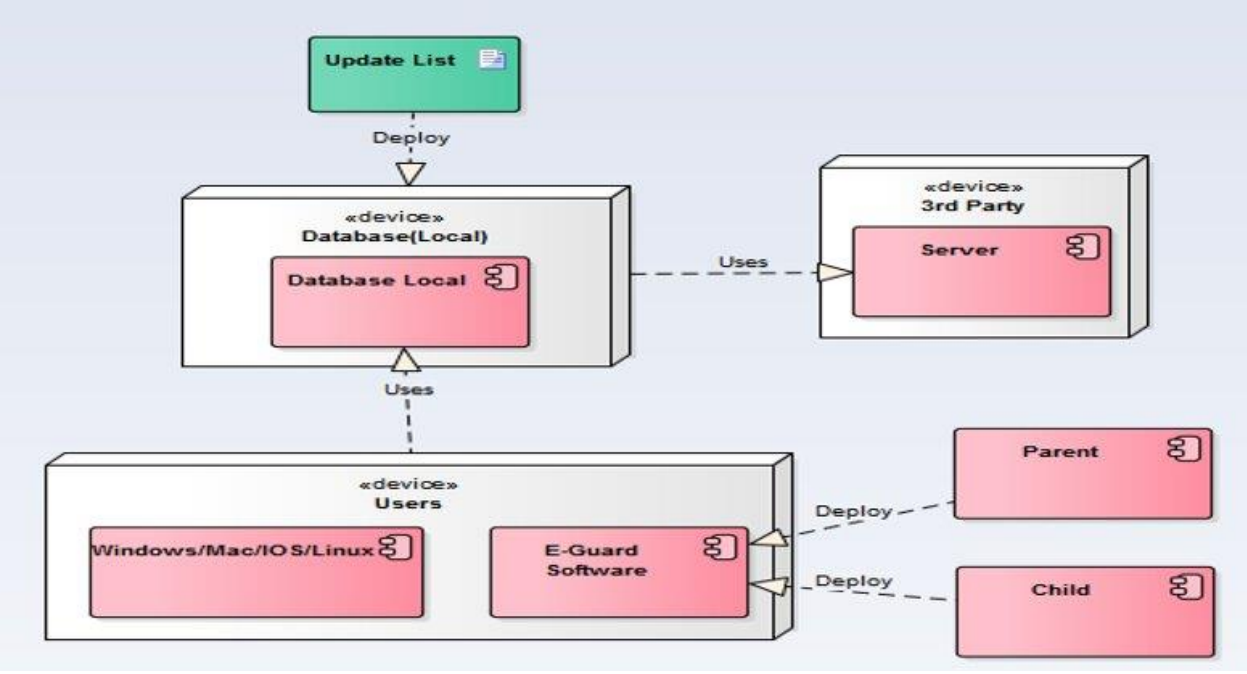
Parents Configure Settings

This activity diagram describes when a parent updates the settings of E-guard. The parent will have the option to either block keywords, whitelist or blacklist websites and then exit the application.



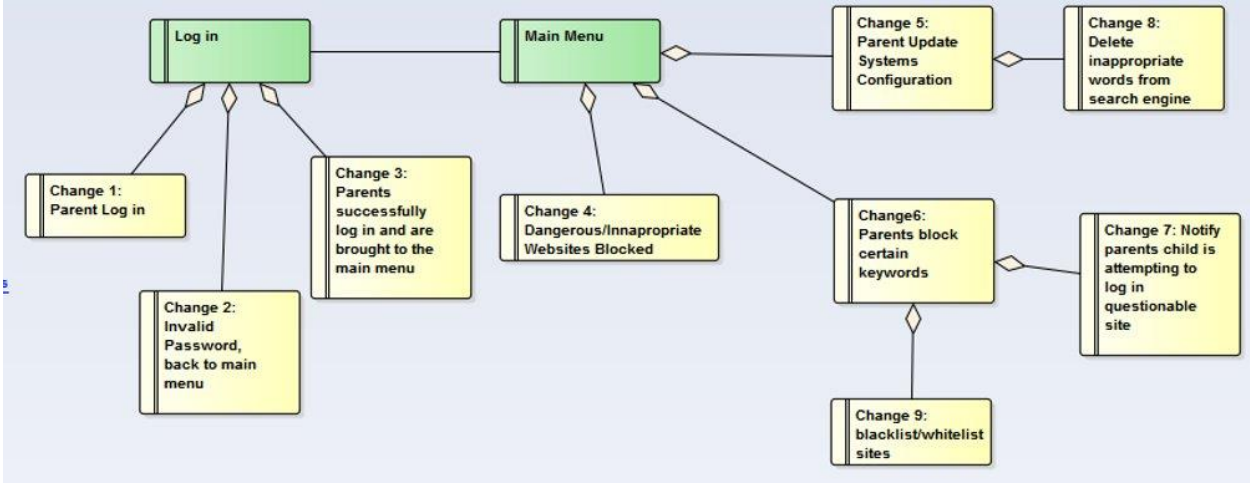
Deployment Diagram:

The deployment diagram is a description of the architecture at run time. The diagram shows the configuration of the hardware and software elements that are dependent on one another. The diagram also reveals how the software elements and artifacts are mapped onto those nodes.



Functional Requirement Diagram:

The functional requirement diagram reveals a visual representation of the workable features that will be implemented when the software is deployed. Functional requirements are the things that the software is defined to have by the customer.



Non-Functional Requirement Diagram:

A nonfunctional requirement are secondary options that include features such as security, warranty, software updates, technical support, and program running 24-7. The nonfunctional requirements also includes the capacity of the database, updating the list, and updating settings.