Software Requirements and Design Specification

for

Kid A

Version 1.0 approved

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12th November 2017

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1. Introduction

1.1 Purpose

The purpose of this document is to present a detailed description of the Kid Activities platform. It will explain the purpose and the features of the system, the interfaces of the system, what the system will do, the constraints under which it must operate and how the system will react to user input. This document is intended for both the stakeholders and the developers.

1.2 Intended Audience and Reading Suggestions

This document is intended for all individuals participating in and/or supervising the Kid A project. Any suggested changes on the requirements listed on this document should be included in the last version of it so it can be a reference to the development team.

1.3 Product Scope

This software system will be a platform which will facilitate the process of choosing activities for kids. The system will be designed to provide parents with a variety of activities and ways to find the most suitable for their kids. Moreover, service providers will be able to access the platform and present their services.

1.4 References

IEEE. IEEE Std 830-1998 IEEE Recommended Practice for Software Requirements Specifications.

IEEE Computer Society, 1998.

2. Overall Description

2.1 Product Perspective

The Kid A project is a self-contained web platform which aims to disrupt the ordinary activity searching by parents. It will gather a wide variety of different activities by specific providers and parents will be able to find the most suitable activities for their kids, based on previous choices and other search criteria.

2.2 Product Functions

2.2.1 Anonymous User

- Search for Activities

2.2.2 Parent

- Manage profile information
- Parent registration
- Parent login
- Subscribe to Activity
- Add Activity Points

2.2.3 Service Provider

- Provider Registration
- Provider login
- Manage Profile Information
- Add Activity
- Delete Activity

2.2.4 Administrator

- Verify Providers
- Block User
- Delete User
- Reset password

2.3 User Classes and Characteristics

Users of this system are the parents, the service providers, the visitors of the site that have not logged in, as well as the administrators. Parents are expected to have basic computer knowledge

in order to browse the site, register and get activity points. Providers are expected to be able to manage their event, upload pictures and schedules. Administrators of the system should have knowledge of the internal modules and be able to manage the users.

2.4 Operating Environment

The website shall operate in the most used browsers, Google Chrome, Mozilla Firefox, Opera, Edge. It shall also be functional and user friendly in different devices with different screen sizes such as smartphones and tablets.

2.5 Design and Implementation Constraints

The primary design constraints are security and the interoperability in different devices and screen sizes. The creation of a user friendly, effective and easily navigable interface will be a major design priority. The platform is meant to be quick and responsive, so the features will be developed with efficiency in mind.

2.6 Assumptions and Dependencies

- Google Maps API
- Binary dependent visible textual watermark for the pictures of the services
- SMTP server or Transactional Email API

3. Functional Requirements

In this section, a more detailed explanation of the features and functions for each User class will be covered. Following the explanation, there will be a short coverage of the Functional requirements for each User action.

3.1 User Class 1 - Anonymous User

3.1.1 Search for Activities

DESCR: Each user in the platform (anonymous user, parent, service provider) will be able to search for activities he is interested in, based on certain criteria. That way, he will obtain the desired information in order to decide whether he wants to sign up and use the platform's provided services.

STIMULUS RESPONSE / SEQUENCES:

Step 1: The user selects the "Search Activity" button located in the platform's main page.

Step 2: The user can select from a list of standard search options in the expanded options list that will appear.

Step 3: Based on the given search criteria, the platform will show on the user's screen the results after the search button is pressed. The location for each event contained in the results will be shown on a map.

USER REQ: The user should not leave the search list empty for a successful search.

SYSTEM REQ: The system should provide the user with a big variety of search options, so that the search function can be as detailed as possible.

3.2 User Class 2 – Parent

3.2.1 Manage Profile Information

DESCR: Each subscribed client (Parent) will have a profile page which will contain all the personal information concerning him. He will be able to revisit this information or change it.

STIMULUS RESPONSE / SEQUENCES:

Step 1: The subscribed user clicks on "My Profile" option to load his profile page.

Step 2: In the profile page, the user can see or alter the information he entered during the sign up.

He can also choose the option “Activity History”, which contains information about the activities he has already subscribed for. Finally, the Activity Points of the user will be displayed and there will be an option to enter an Activity Point prepaid card.

Step 3: After verifying any changes, the information is sent to the server and stored in the database.

USER REQ: The user should be logged in in order to access his profile information.

SYSTEM REQ: The system should be able to differentiate sign in information given by each user in order to display the correct profile information for each user.

3.2.2 Parent registration-Create account

DESCR: There will be a screen that prompts the user to create an account either by entering his/her personal information manually or by automatically signing up with Facebook/Google+ account.

STIMULUS / RESPONSE SEQUENCES:

Step 1: User clicks the “Create Account” option

Step 2: The user must provide the following information:

- Username
- Password
- Password Repeat
- Email Address
- First Name
- Last Name
- City
- Address Line
- Zipcode
- Phone Number (optional)

There is also the option of automatic sign-up as mentioned above.

Step 3: This information is sent to the server and stored in the database.

Step 4: Registration completed and the user is forwarded to the main screen.

USER REQ: All the mandatory fields in the registration form should be filled. The user should not proceed until a valid email address is entered. The server should verify that the user’s input is consistent with the format of an e-mail address.

SYSTEM REQ: The system should ensure that the username is not already used. It should also ensure that the user’s information is safely stored.

3.2.3 Parent login

DESCR: Given that a user has registered, the user should be able to login by entering his/her credentials in the login form.

STIMULUS / RESPONSE SEQUENCES:

Step 1: User clicks the “Log In” option.

Step 2: The user must provide username and password.

Step 3: The user credentials are sent to server and are validated in the database.

Step 4: The user logged in and is taken to main screen.

USER REQ: Both username and password field should be filled by the user.

SYSTEM REQ: The system should ensure that user’s login credentials are transferred safely and encrypted to the server. The server should verify that user has entered an existing username, that the password is valid and that the username is active (not blocked by administrator). Also, the system should be able to differentiate whether the username belongs to a parent or provider and redirect each user to the corresponding main screen.

3.2.4 Subscribe to Activity

DESCR: Each logged in user will be able to subscribe to activities of his choice. This function describes the baseline of the platform’s functionality philosophy since the whole philosophy of the project revolves around easy-bookings by the parents, for certain activities.

STIMULUS RESPONSE / SEQUENCES:

Step 1: The user browses the activities or searches activities of his choice using search criteria.

Step 2: Upon finding a desired activity he can click on the option “Subscribe” to participate in it.

Step 3: If the user has enough Activity Points in the account, the transaction is completed, otherwise a message is displayed.

Step 4: If the transaction safely and correctly takes place, the subscription ticket is sent to the user in PDF form via e-mail.

USER REQ: The user should possess the right amount of Activity Points for any activity he wished to participate in.

SYSTEM REQ: The system should be able to safely handle Activity Points transactions and update the balances immediately.

3.2.5 Add Activity Points

DESCR: User will be able to enter codes of prepaid cards and be accredited Activity Points. By using the Activity Points the user will be able to make purchases

STIMULUS / RESPONSE SEQUENCES:

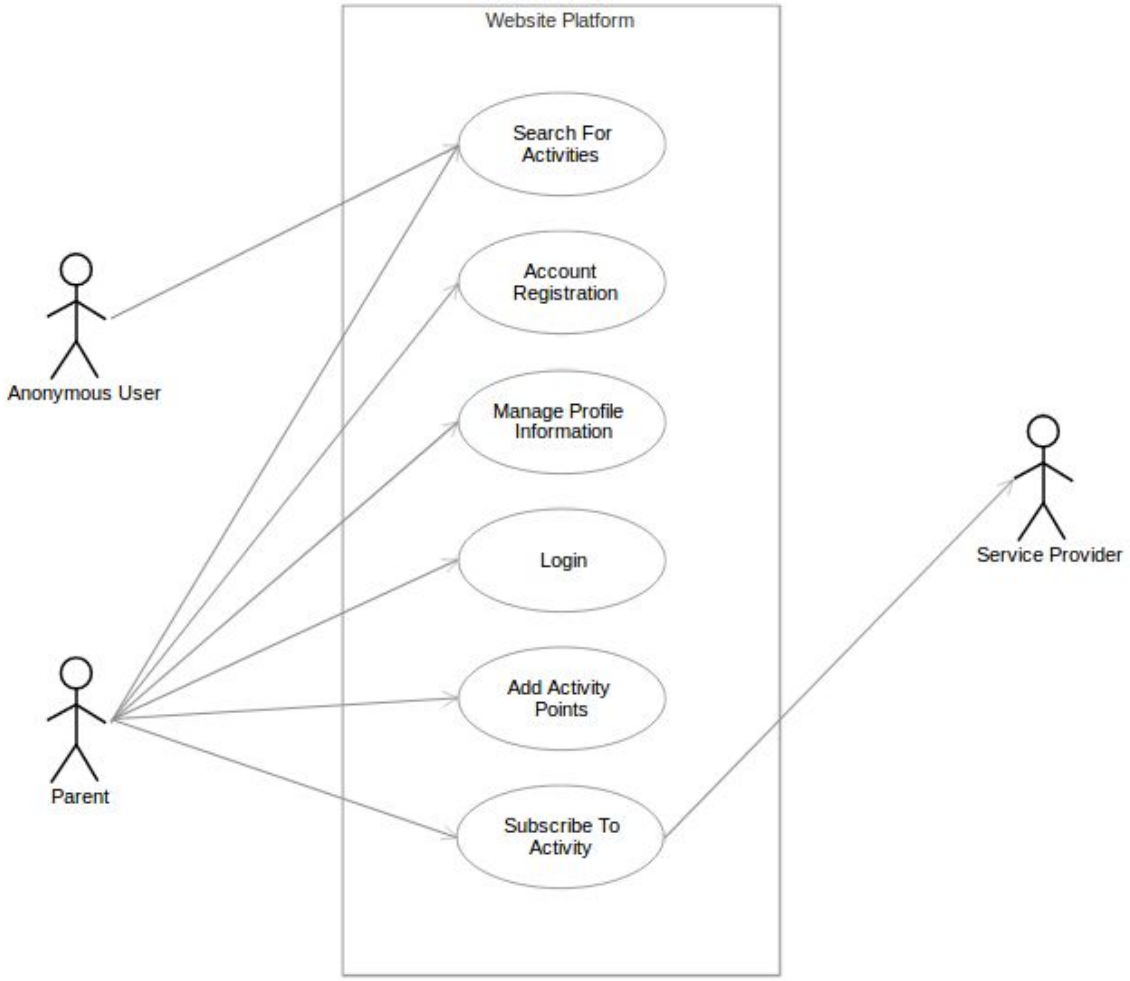
Step 1: User goes to “Enter Code” section located in his profile page.

Step 2: User enters the code.

Step 3: This information is sent to the server for verification.

USER REQ: The user must enter a valid code.

SYSTEM REQ: The system must ensure that each code is used only once and that if the code is valid, the correct number of Activity Points are transferred to the user’s account.



3.3 User Class 3 – Service Provider

3.3.1 Provider registration-Create account

DESCR: There will be a screen which prompts the activity provider to create an account by specifying required company information and contact details.

STIMULUS / RESPONSE SEQUENCES:

Step 1: Provider goes to “Partnerships” section in the main screen, and selects the “Partner Sign-Up” option.

Step 2: Provider must provide the following company information:

- Registered Business Name
- Website (optional)
- City
- Address Line 1
- Address Line 2 (optional)
- Zipcode

Provider must also provide the following contact details:

- First Name
- Last Name
- Email Address
- Job Title
- Phone Number

Finally, provider must provide a username and a password (login credentials).

Step 3: This information is sent to server and stored in the database.

Step 4: Registration request is completed. The registration must be verified by the administrator before the account can be used.

USER REQ: All the mandatory fields in the registration form should be filled. The user should not proceed until a valid email address and phone number is entered.

SYSTEM REQ: The system should ensure that the username is not already used. It should also verify that the user’s input is consistent with the format required. Finally, it should ensure that the user’s information is safely stored.

3.3.2 Provider login

DESCR: Given that a user has registered his company, then the provider should be able to login by entering his login credentials in the login form.

STIMULUS / RESPONSE SEQUENCES:

Step 1: User clicks the “Log In” option.

Step 2: User must provide username and password.

Step 3: The user credentials are sent to server and are validated in the database.

Step 4: Login is completed and user is taken to main screen.

USER REQ: Both username and password field should be filled by the user.

SYSTEM REQ: The system should ensure that user’s login credentials are transferred safely and encrypted to the server. The server should verify that user has entered an existing username, that the password is valid and that the username is active (not blocked by administrator). Also, the system should be able to differentiate whether the username belongs to a parent or provider and redirect each user to the corresponding main screen.

3.3.3 Manage Profile Information

DESCR: Every Service Provider must have a Profile page in order to be able to better handle his activities and Point earnings. He must also have a profile for advertising purposes, as signed users can search for activities based on certain Providers.

STIMULUS RESPONSE / SEQUENCES:

Step 1: The provider clicks on “My Profile” option to load his profile page.

Step 2: In the profile page, the provider can see or alter the information he entered during the sign up. He can also add activities by pressing the “Add Activity” tab.

Step 3: After verifying any changes, the information is sent to the server and stored in the database.

USER REQ: The provider should be logged in in order to access his profile information.

SYSTEM REQ: The system should be able to differentiate sign in information given by each provider in order to print the correct profile information for each individual.

3.3.4 Add activity

DESCR: Given that a user has registered his company, then he should be able to add activities that his company is offering.

STIMULUS / RESPONSE SEQUENCES:

Step 1: User presses the “Add Activity” option located in his profile.

Step 2: User must provide the following information:

- Activity Name
- Category
- Location
- Cost (in “Activity Points”)
- Target Age
- Date and/or Frequency
- Duration
- Overview (optional)

The user should be able to upload photos related to the activity he/she is offering.

Step 3: This information is sent to the server and stored in the database.

Step 4: Activity has been successfully added to the main page “Activities” section.

USER REQ: The photos uploaded by the user should be in a format supported by the server.

SYSTEM REQ: The system should verify that all fields have been filled correctly.

3.3.5 View activity history

DESCR: The user should be able to revisit his events history.

STIMULUS / RESPONSE SEQUENCES:

Step 1: The user presses “My Profile” option

Step 2: The user presses “View Events History” option in his profile.

Step 3: The user is able to see a list of his events that have are currently running or have already completed and some details on each one of them

USER REQ: The user should have added activities in order to browse activity history.

SYSTEM REQ: The system should correctly keep track of the activities of each given Provider user.

3.3.6 View monthly statistics

DESCR: The user should be able to view monthly reports and statistics based on the tickets sold on his events.

STIMULUS / RESPONSE SEQUENCES:

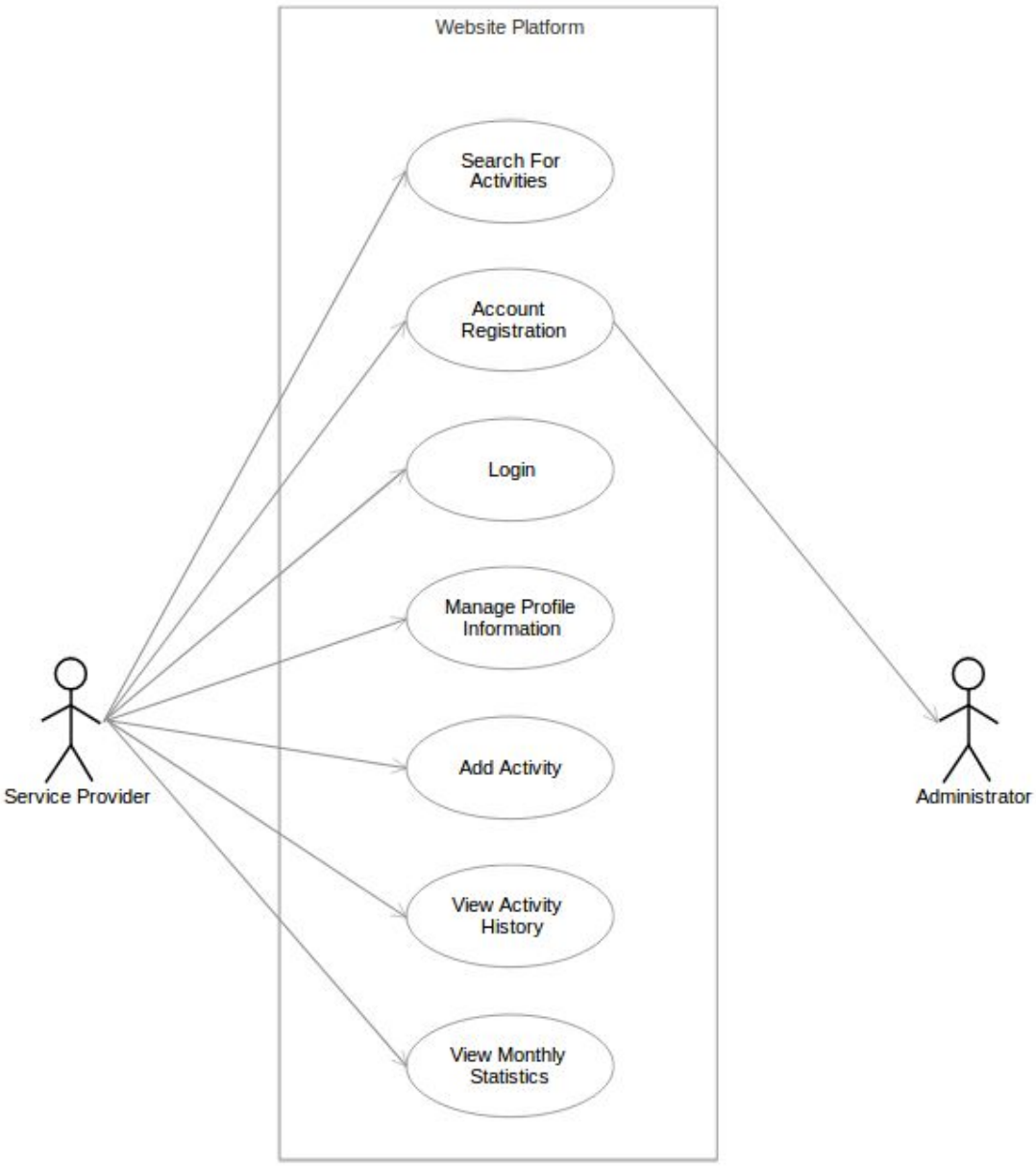
Step 1: The user presses “My Profile” option

Step 2: The user presses “View Monthly Statistics” option in his profile.

Step 3: The user is able to view monthly statistics conserning his events’ participation and his total earnings per event.

USER REQ: The user should have added activities in order to browse monthly reports tab

SYSTEM REQ: The system should correctly keep track of the participation information for the events of each provider.


Website Platform
Search For Activities
Account Registration
Login
Manage Profile Information
Add Activity
View Activity History
View Monthly Statistics
Service Provider
Administrator

3.4 User Class 4 – Administrator

3.4.1 Verify Providers

DESCR: To ensure reliability for the platform's providers and activities, the administrator should be able to accept or reject each provider registration request.

STIMULUS RESPONSE / SEQUENCES:

Step 1: In his profile page he can see a list of provider registration requests waiting to be verified.

Step 2: Based on the registration request information or other information provided to the administrator through communication with the providers, the administrator can decide whether to accept requests (resulting in account creations) or to deny requests (resulting in account rejections).

USER REQ: The user should be logged in to access this feature. He must also have knowledge of the service provider whereabouts, so that the platform is safe and reliable.

SYSTEM REQ: The system should be able to automatically create registration requests on each provider sign up.

3.4.2 Block user

DESCR: The administrator will be able to block a user (parent or provider) from logging in the platform if he suspects unethical or malicious activity. That way the reliability of the whole system can be more efficiently preserved.

STIMULUS RESPONSE / SEQUENCES:

Step 1: In his profile, the administrator can see all the signed user through the "Show Users" option.

Step 2: Upon finding the desired user, he can check the block option. After pressing "Submit" the user will then be blocked and he will not be able to access his account. For an unblock to occur, he can check the unblock option and press "Submit" again. It should be noted that by checking many checkboxes before pressing the "Submit" button, the administrator is able to block more than one user at a time.

USER REQ: The user should be very cautious when using the block feature as it should be used only in extreme occasions concerning service reliability or system availability.

SYSTEM REQ: The system should be able to handle these two states (active, blocked) for any given account. A blocked should must not be able to log in to the system and an unblocked user should never face that issue.

3.4.3 Delete user

DESCR: The administrator should also be able to delete a user (parent or provider) account.

STIMULUS RESPONSE / SEQUENCES

Step 1: In his profile page, the administrator can see all the signed user through the “Show Users” option.

Step 2: Upon finding the desired user, he can check the delete option. After pressing “Submit” the user account will then be deleted. It should be noted that by checking many checkboxes before pressing the “Submit” button, the administrator is able to delete more than one user at a time.

USER REQ: The user should be very cautious and not abuse this feature as it can lead to very unsatisfied costumers and bad publicity for the platform.

SYSTEM REQ: The system should ensure that after an account is deleted there must be no record of it in the database. That means, if someone tries to create an account with the same credentials as the delete one’s no duplication error should occur.

3.4.4 Reset Password

DESCR: The administrator should be able to request a password reset command for every user (parent or provider) subscribed in the platform.

STIMULUS RESPONSE / SEQUENCES:

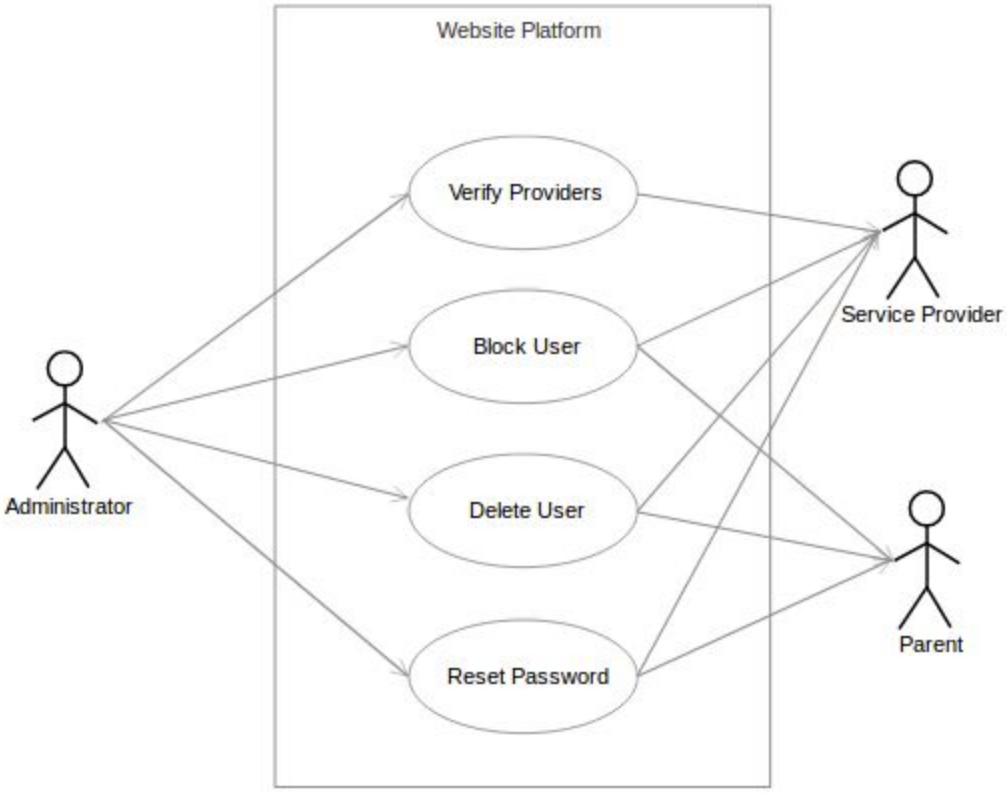
Step 1: In his profile, the administrator can see all the signed user through the “Show Users” option.

Step 2: Upon finding the desired user, he can then check the “Request Password Reset” option and click “Submit”.

Step 3: The next time the user logs in, he will be requested to change his password.

USER REQ: -

SYSTEM REQ: The system should ensure that when a password reset command is issued by the administrator, the user will receive the request after his next log in.


Website Platform
Verify Providers
Block User
Delete User
Reset Password
Administrator
Service Provider
Parent

4. Other Nonfunctional Requirements

4.1 Performance Requirements

The system will be designed to be able to handle medium load of users. The website should be responsive for various platforms and work uniformly for Desktop, Mobile and Tablet devices.

4.2 Safety Requirements

At first, the system use shall not cause any harm to any party or device involved. Additionally, due to the sensitive target group of the product, emphasis on the safety of the provided activities shall be given, through the verification process that the service providers must go through. Administrator is responsible to verify and accept only accredited service providers in order to guarantee a pleasant and safe experience for the children.

4.3 Security Requirements

Standard security practices will be used to ensure that sensitive personal data like names, addresses etc. are stored securely and that the payment procedure is safe for both activity providers and regular users.

4.4 Software Quality Attributes

The graphical user interface will be designed with usability as a priority. The software developed in this project will be thoroughly tested and shall be maintainable, reliable, robust and reusable.

4.5 Business Rules

4.5.1 Digital Portfolio

The pricing system is a major design decision. A virtual coin in the form of points (Activity Points) will be used for the transactions. Parents will be able to buy such points, which then can be used for any of the activities provided in the platform. Activity Points cannot take decimal values.

Providers will explicitly state the price in Activity points of each activity they list. When a parent subscribes for an activity, the Activity points will be safely removed from the account of the parent

4.5.2 Business Profit

The platform will make a profit by charging the provider with a commission fee after every successful transaction. The fee will be 8% of the total Activity points accredited to the provider. In case the commission is not an integer, it will be rounded down in favor of the provider.

5. Technical Requirements

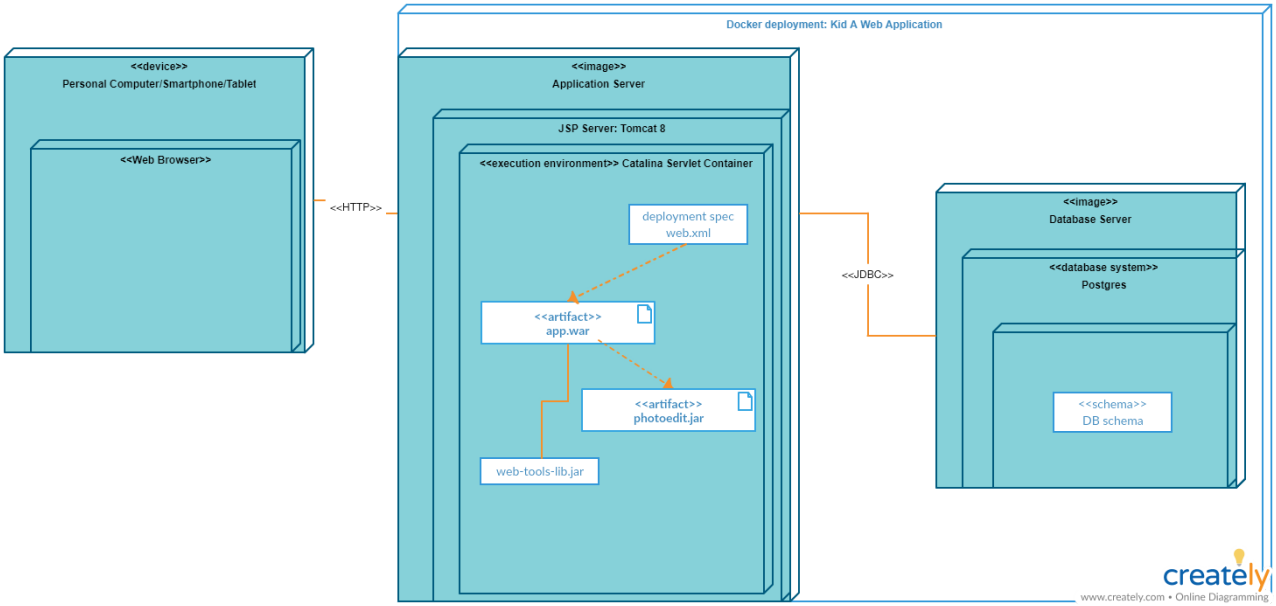
5.1 Technologies Used

The technologies that are going to be used for the implementation of this project are the following:

- Java 8 as a programming language
- Git for Version Control
- Postgres 10 as a RDBMS
- AJAX, jquery and bootstrap javascript frameworks
- Gradle as automation build tool
- JSPs
- Spring Boot for the MVC pattern
- Hibernate 5 as an ORM

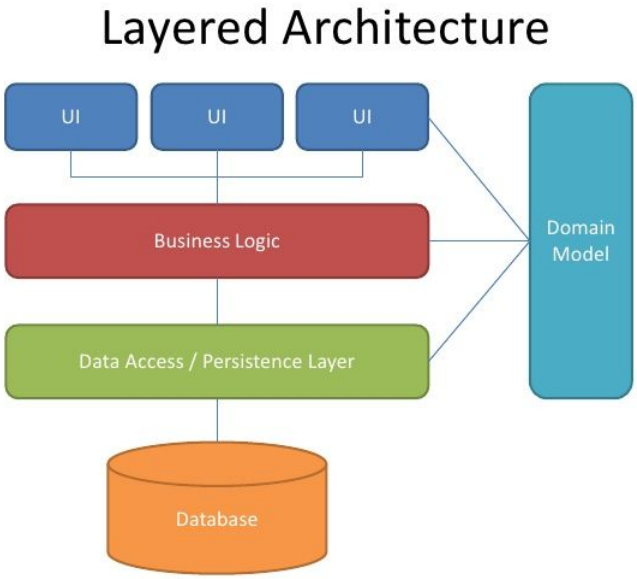
5.2 Deployment Diagram

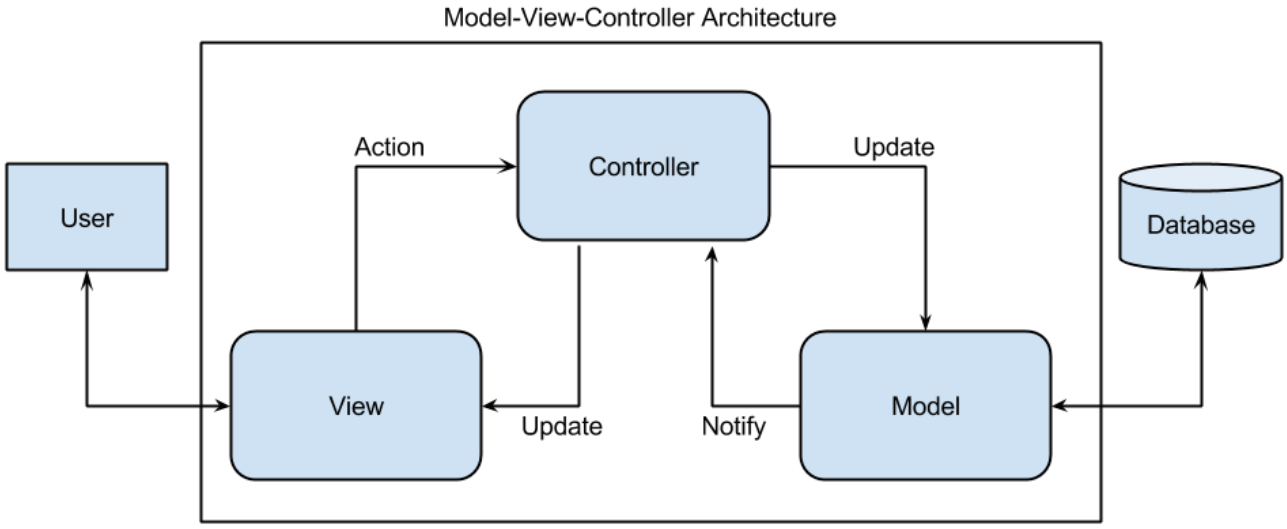
Docker will be used for the deployment. There will be two separate containers; first container should be responsible for the database and second one for the Tomcat server with the packaged WAR application.



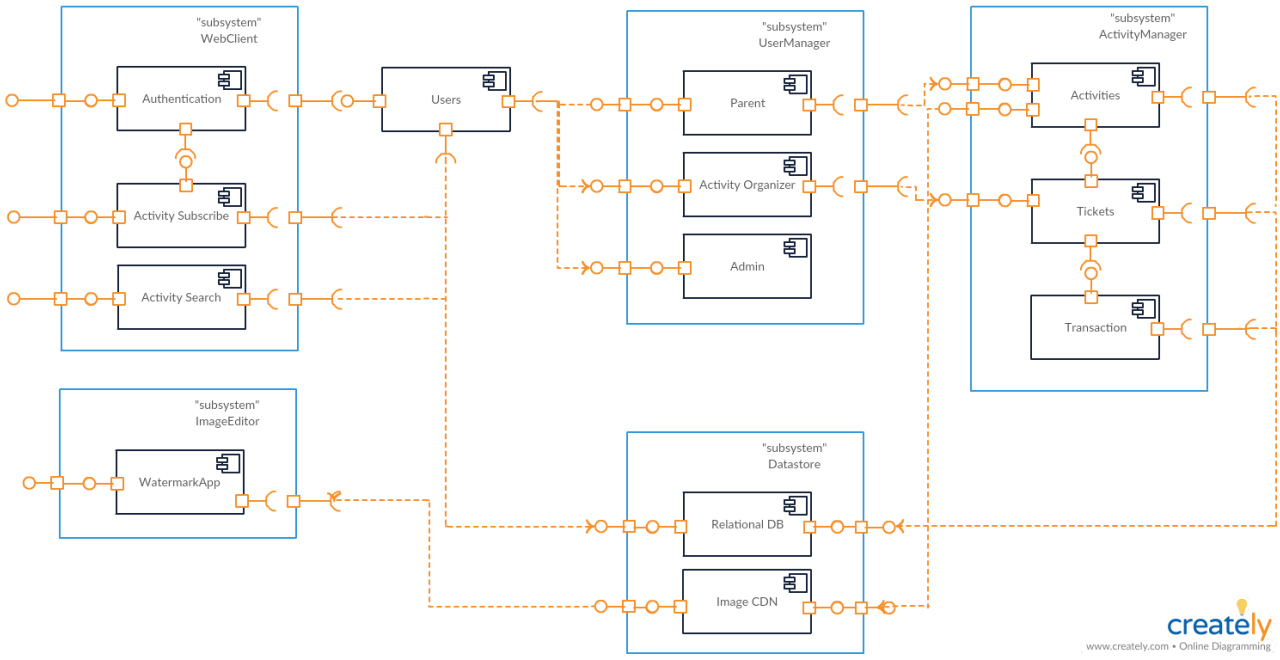
5.3 Architectural Design and Components

The architectural pattern of the application will be MVC together with a client-server architecture. The client-server architecture will consist of three tiers (layers). The **UI Layer** (User Interface), implemented in the View component, that will be responsible for the menus, forms and all the UI components the user interacts with. The **Business Layer,** implemented in the Controller component, will be responsible for the business logic of the application. Finally, **Data Access Layer,** implemented in the Model component, will be the layer responsible for data storage and queries.



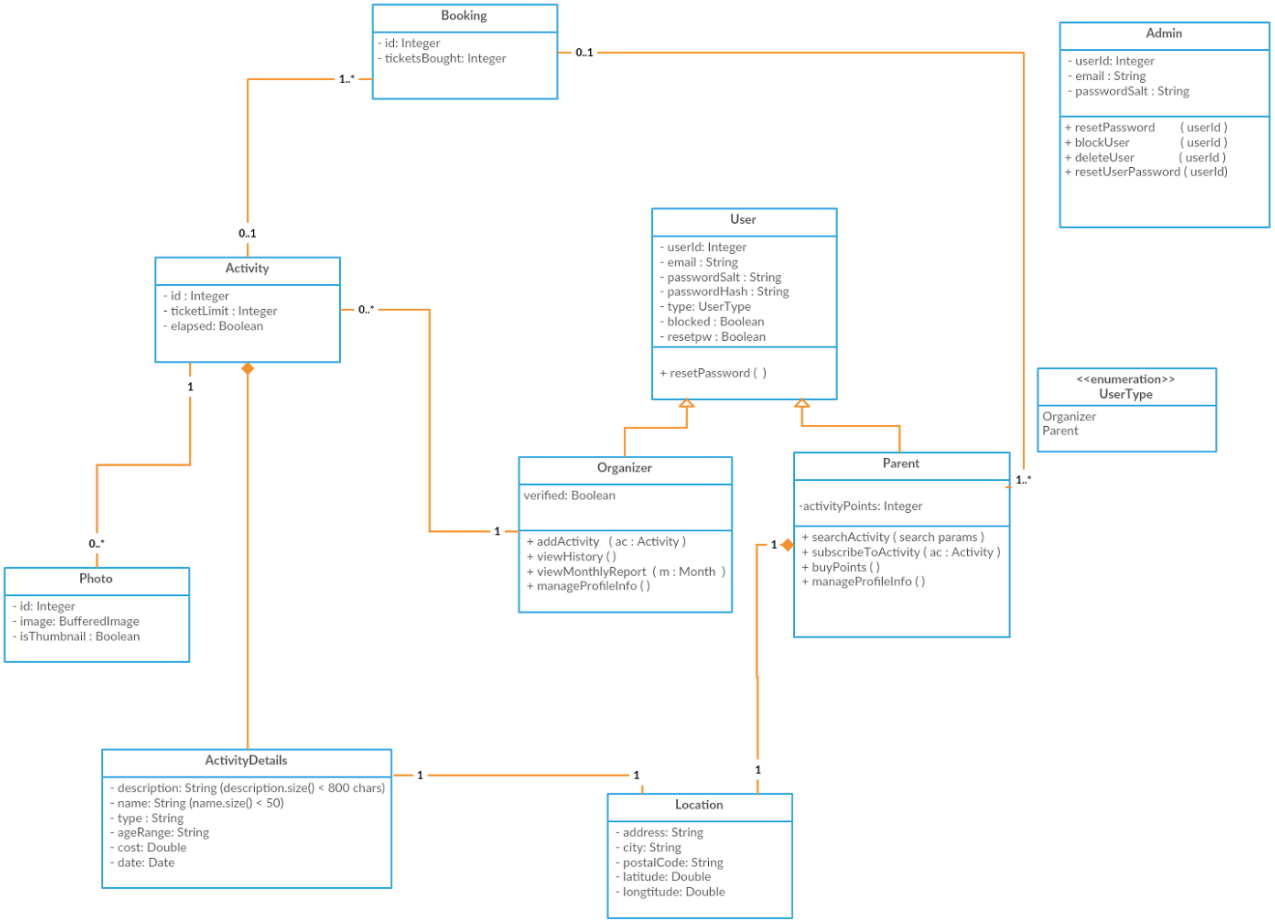


Below the component diagram is attached.



5.4 Data Structure Design

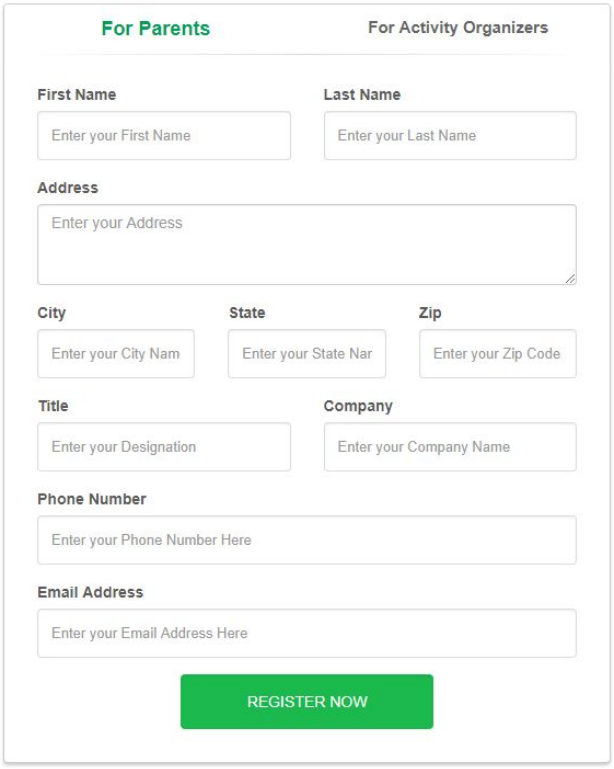
In this section the data structure design will be presented. A class diagram was created with the basic classes that will be persisted in the RDBMS.



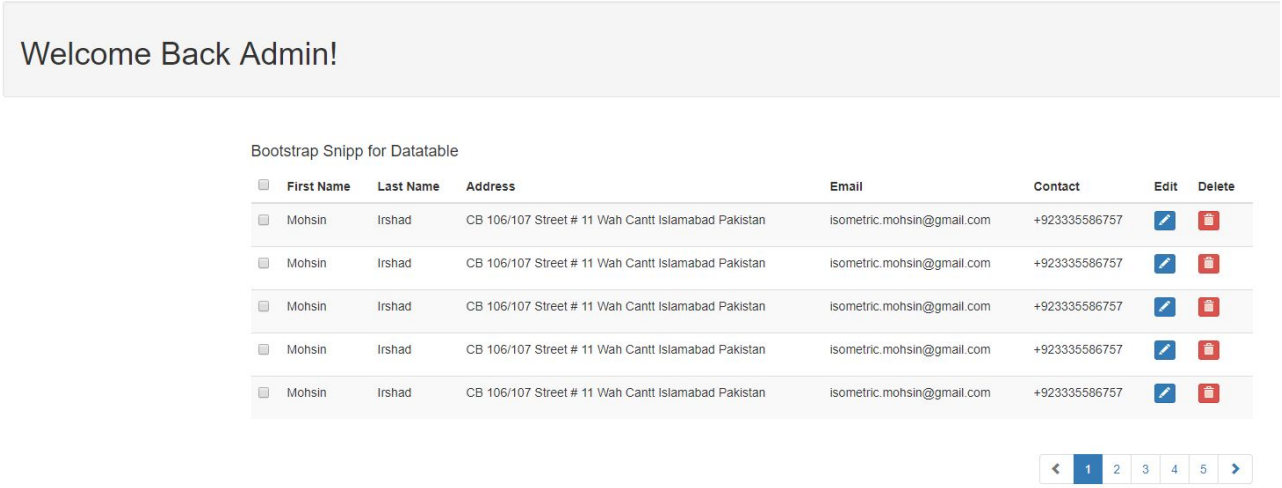
5.5 Interface Design and Wireframes

In this section, a visual guide will be shown, that will represent the skeletal framework of our website. More specifically, GUI (Graphical User Interface) instances for a variety of our platform functions will be listed.

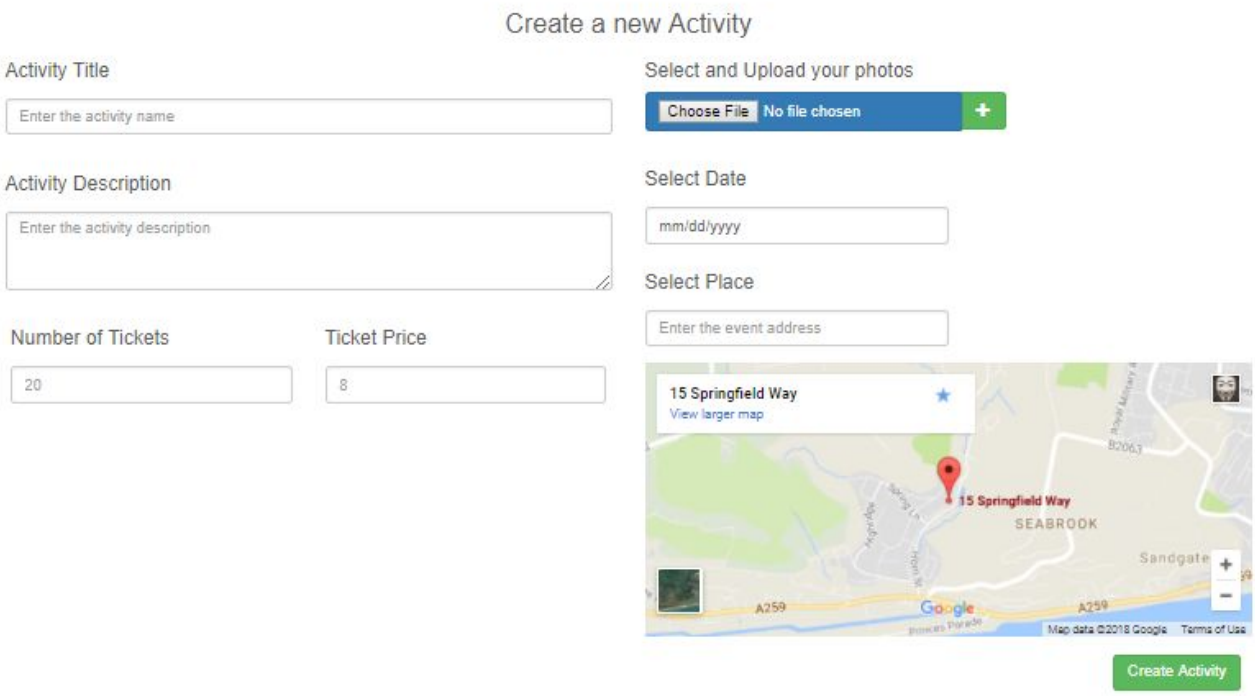
User Registration:



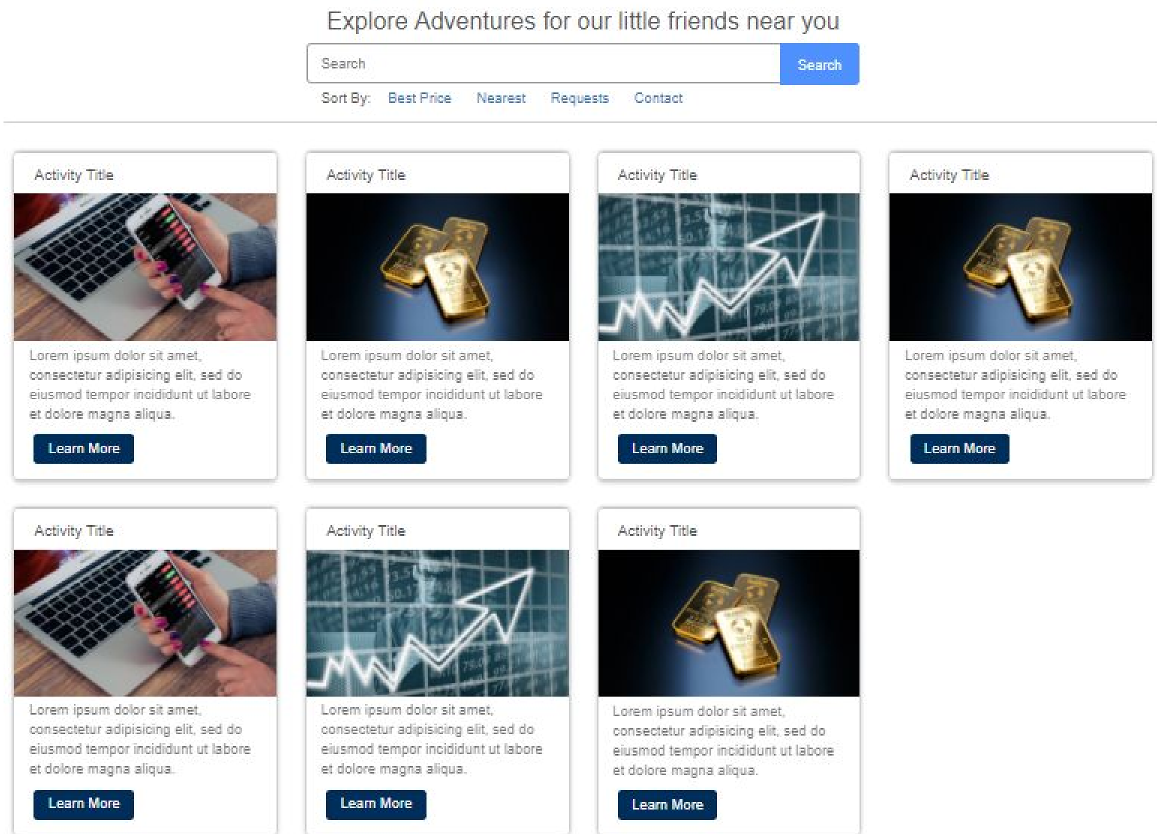
Admin panel:



Service Provider Activity Create:



Activity Browse Page:



Activity View Page:

Activity Title

Activity Description

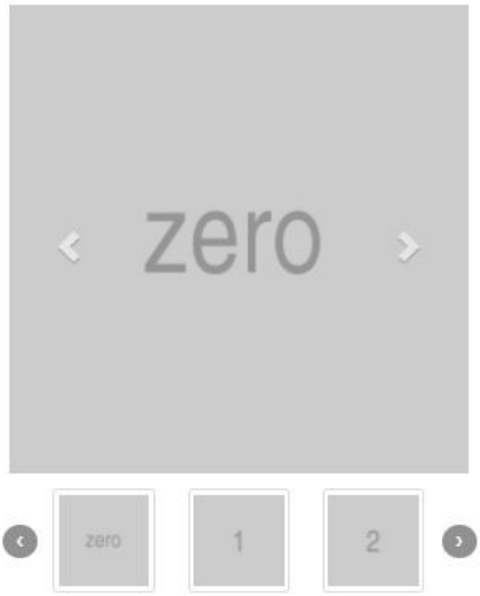
Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nam viverra euismod odio, gravida pellentesque urna varius vitae. Sed dui lorem, adipiscing in adipiscing et, interdum nec metus. Mauris ultricies, justo eu convallis placerat, felis enim.

Activity Details

- Lorem Ipsum
- Dolor Sit Amet
- Consectetur
- Adipiscing Elit

Price per Ticket: $179

Number of Tickets: 0 ▼ Book Now



Event Date & Address

JANUARY 2018

Sun	Mon	Tue	Wed	Thu	Fri	Sat
30	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3

Snail mail

Hythe Window Cleaning
15 Springfield Way
Hythe
Kent
United Kingdon
CT21 5SH
P: 01234 567 890

About The Organizer:

Lorem ipsum dolor sit amet, consectetur adipisicing elit. Omnis et enim aperiam inventore, similique necessitatibus neque non! Doloribus, modi sapiente laboriosam aperiam fugiat laborum. Sequi mollitia, necessitatibus quae sint natus.