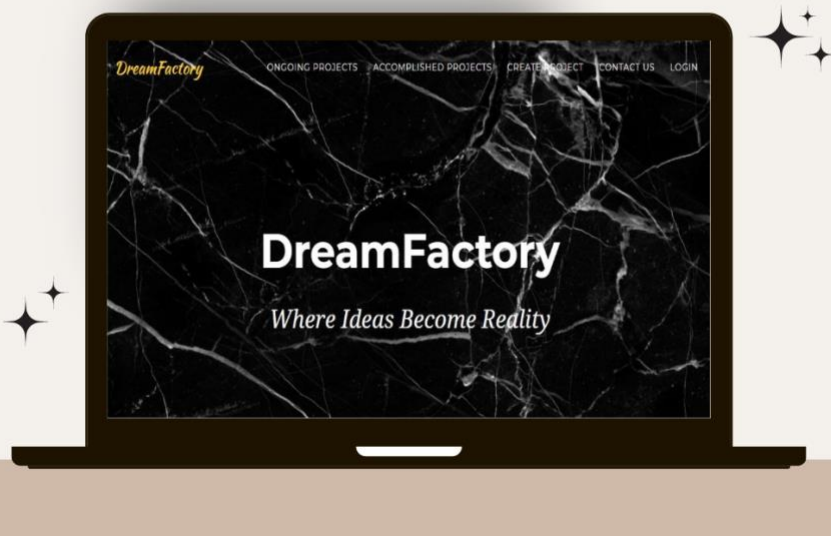


CROWDFUNDING PLATFORM

DREAM FACTORY



Crowdfunding platform Report

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Application Topic

1.1 Topic B: Crowdfunding

This application provides aims to provide entrepreneurs a platform to procure capital via crowdfunding. (e.g., <https://www.globalgiving.org>, <https://fundanything.com>).

- Entrepreneurs can advertise their projects (title, description, start date, duration, keywords or categories, amount of funding sought, etc.).
- Users can browse the projects and choose projects to fund.
- Users can play roles of both entrepreneurs and investors.
- The application tracks the current amount of funds raised, updates the status of funded projects, and advertises successfully funded projects on a webpage and shows unfunded projects
- Each user has an account that can create and fund projects.
- Administrators can create/modify/delete entries.

1.2 Solution: DreamFactory

The group came up with DreamFactory , a crowdfunding interface platform, for entrepreneurs to advertise the projects and also, for investors and other entrepreneurs to browse and fund these projects. This platform will be on a webpage that resides on a database to store all the user account details, entries, project details such as project name, funding amount, etc. The logic of the transactions, funding and browsing of project will be coded in Hypertext Preprocessor (PHP) and Structured Query Language (SQL) queries, while the users' interfaces will be the webpage. Refer to Table 1 in Annex B for the breakdown of tiers in DreamFactory.

Specifications of Software Tools/ Frameworks

2.1 Software Tools

Here are the software tools used for the project:

- PhpMyAdmin for MySQL framework,
- Apache Web Server to run and test web pages,
- Responsive Web framework
 - using Bootstrap framework
 - consists of Hypertext Markup Language (HTML), Cascading Style Sheets (CSS), Hypertext Preprocessor (PHP) scripts and Javascript files.

2.2 Frameworks

The framework comprises of the MySQL framework and responsive web framework.

2.2.1 MySQL Framework

The MySQL framework can be visualised and accessed using PhpMyAdmin. The database is implemented using an imported MySQL Data Definition Language (DDL) script. Refer to

Annex A for the DDL script.

The group has decided to use PhpMyAdmin because it has a user-friendly interface that supports MySQL functions like browse, drop, create, copy and alter databases, tables, views, fields and indexes, execute MySQL queries, manage stored procedures and functions.

Refer to Figure 1, in Annex B, for the snapshot of the tables residing in the database for DreamFactory.

2.2.2 Responsive Web Framework

The responsive web framework involves an integration in Bootstrap, CSS, HTML, JavaScript and PHP. Bootstrap provides all the necessary and essential templates to have well-rounded web page design.

Bootstrap has templates of HTML, CSS and JavaScript which we used to generate an aesthetically pleasing website. We used CSS to add colour and enhancements to the design and appearance of the webpages. JavaScript adds behavior to the web pages in order for users to load a new web page by responding to user's actions and requests. We used PHP to interact with our database and process queries and sensitive information (login, etc) on the server side to ensure security. Refer to web page screenshots in Annex D.

Entity Relationship (ER)

3.1 Entities

The entities that are present in DreamFactory are 'users', 'projects', 'categories' and 'keywords'.

- Users (**user_id**, email, password, full_name, privilege, session_id, session_exp)
- Projects (**project_id**, **user_id**, **title**, image_url, description, end_datetime, **category**, funding_goal)
 - user_id: references foreign category in Users
 - category: references foreign category in Categories
- Categories (**category**)
- Keywords (**keyword**)

Refer to Annex C for the ER diagram.

3.2 Relationships

There are two relationships between 'users' and 'projects' entities. One of the relationship is 'own' which is a one-to-many relationship, 'projects'(1,1) and 'users'(0,n). There is a constraint that each project created has to be owned by one user but one user can own zero to many projects. The other relationship is 'fundings', which has attributes, 'amount' and 'timestamp', and has a many-to-many relationship, 'projects'(0,n) and 'users'(0,n). There is a constraint that

each project can be funded by zero to many users and each user can fund zero to many projects.

There is also a relationship between ‘projects’ and ‘keywords’ entities called ‘contain’ and it is a many-to-many relationship, ‘projects’(1,n) and ‘keywords’(1,n). There is a constraint that projects have to contain at least one keyword and keywords have to be related to at least one project.

Lastly, there is a relationship between ‘categories’ and ‘projects’ entities called ‘has’ and it is a one-to-many relationship, ‘projects’ (1,1) and ‘categories’(0,n). There is a constraint that each project has one category and one category can be related to zero to many projects. Refer to Annex C for the ER diagram.

Relational Schema

4.1 Relational Schema of DreamFactory Database

The database is named as ‘dreamfactory’. Once the entities and relationships are in place, the database is set up to conduct operations on entities such as ‘projects’, ‘keywords’, ‘categories’ and ‘users’. Refer to Annex A for the DDL script.

There are six tables in total which are ‘fundings’, ‘projects’, ‘keywords’, ‘project_keywords’, ‘categories’ and ‘users’. Refer to Section 3.1 and 3.2 for the attributes of the entities. The following constraints are in place:

- Table ‘fundings’ has attributes that are all ‘NOT NULL’, amount is ‘UNSIGNED NOT NULL’ because it ensures that funding amounts inputted by users are not negative values and timestamp is ‘NOT NULL DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP’. The primary key is ‘(user_id, project_id)’ whereby ‘user_id’ is referenced from Table ‘users’ and ‘project_id’ is referenced from Table ‘projects’.
- Table ‘projects’ has attributes that are all ‘NOT NULL’ except for ‘image_url’ because it is optional. ‘project_id’ is set as ‘AUTO_INCREMENT’. ‘title’ is set as unique key.
- Table ‘project_keywords’ has attributes that are set as ‘NOT NULL’. The primary key is ‘(project_id, keyword)’ whereby ‘project_id’ is referenced from Table ‘projects’ and ‘keyword’ is referenced from Table ‘keywords’.
- Table ‘users’ has attributes that are all ‘NOT NULL’ except for ‘session_id’ and ‘session_exp’. ‘user_id’ is set as ‘AUTO_INCREMENT’. ‘privilege’ is set as ‘DEFAULT ‘0’ because only those users labelled as ‘1’ are administrators of DreamFactory. ‘email’ is set as unique key.
- Table ‘categories’ has attributes that are set as ‘NOT NULL’.

Application Functionalities

5.1 Creation of Data

5.1.1 Creation of User

All users have fixed accounts identified by their emails. They are also tagged server side with indexes. A special index number is used for Administrator accounts. Users can create their accounts via the registration page. Refer to Figure 6 in Annex D for screenshot of Registration page.

5.1.2 Creation of Projects

All users have the ability to create a project for funding. This can be done via the create project page. Each project is identified by a unique project ID that is assigned by the server. To create project, user has to be logged in first. Refer to Figure 8 in Annex D for the screenshot of Create Project page.

5.1.3 Creation of Category

Only Administrators are allowed to create a category. This category is universal and users can only choose a category that is already on the list when creating project.

5.1.4 Creation of Keyword

All users can add keywords to their project. The keyword is added to a master list and also tagged to their project.

5.1.5 Funding

All users can fund any project for any non-negative amount. Attempting to input a negative amount will result in an error and no amendment is made to the database. Refer to Figure 9 in Annex D for the Funding page.

5.2 Deletion of Data

5.2.1 Deletion of Project

Only administrators or the owners of the project can delete the project.

5.3 Update of Data

5.3.1 Update Funding

The total amount funded will be updated automatically based on how much funds users have inputted into the project. Each amount funded, it is associated with a unique user id and project id.

5.4 Browsing Data or Search Functions

5.4.1 Search Project

The search function can be found in the Browse Project page where users can search projects by typing the project title or clicking on the highlighted keywords or categories under the projects tables to get projects with the same keywords or categories. Refer to Figure 4 in Annex D for the search function under Browse Projects page.

5.4.2 Browsing Projects

Browsing of projects can be filtered into two tables, funded projects and ongoing projects. Refer to Section 6.1.1 and 6.1.2 for detailed explanations on how the tables of projects are derived.

5.5 Retrieval of Interesting Statistics on Data

5.5.1 Percentage of Project Funding Completion

This statistic can be found under projects in the Homepage and it is useful to reflect how close or how far the project is from being fully funded. Refer to Figure 3 in Annex D for examples displayed in the homepage. The percentage of project funding completion is calculated as follows:

$$\frac{\text{total funding amount from users}}{\text{funding goal of project}} \times 100\%$$

5.5.2 Total Number of Users

This statistic can be found in the Homepage and it reflects how many users DreamFactory currently has. Refer to Figure 11 in Annex D the statistic displayed in the homepage.

5.5.3 Total Number of Projects

This statistic can be found in the Homepage and it reflects how many projects have been created by users in DreamFactory. Refer to Figure 11 in Annex D the statistic displayed in the homepage.

5.5.4 Average Funding of Projects

This statistic can be found in the Homepage and it is useful to reflect how much the average funding of projects is. Refer to Figure 11 in Annex D the statistic displayed in the homepage. The average funding of projects is calculated as follows:

$$\$ \left(\frac{\text{total funding amount from all projects}}{\text{total number of projects}} \right) \text{ per project}$$

5.6 Non-trivial Integrity Constraint

5.6.1 Funding Amount

The amount under 'fundings' table is set as 'UNSIGNED NOT NULL' in the DDL. It is set as so to ensure that the input for amount is always non-negative. If user types in a negative funding amount to the project an error message will be shown and no change will be made to the database. This is also done to ensure that no user can reduce total funded amount.

5.6.2 Foreign Keys under 'projects' Table

There are constraints set to the 'projects' table. Below is a snippet of the DDL code.

```
-----  
ALTER TABLE `projects`  
  ADD CONSTRAINT `fk_projects_categories_category` FOREIGN KEY  
  (`category`) REFERENCES `categories` (`category`) ON UPDATE CASCADE,  
  ADD CONSTRAINT `fk_projects_users_user_id` FOREIGN KEY (`user_id`)  
  REFERENCES `users` (`user_id`) ON DELETE CASCADE ON UPDATE CASCADE;  
-----
```

SQL Documentation

6.1 SQL DML Complex Queries

6.1.1 Funded Projects

Funded projects are selected projects whereby (1) the funding goal has been reached and the deadline is over, or (2) the funding goal has been reached but the deadline is not over yet. Refer to Figure 12 for the query of retrieving tables of funded projects in Annex E.

6.1.2 Ongoing Projects

Ongoing projects are selected projects whereby the funding goal is not reached and the deadline is now over yet.

Refer to Figure 13 for the query of retrieving tables of ongoing projects in Annex E.

Future Improvements

7.1 SQL Queries

7.1.1 Transactions

Modify SQL queries into transactions to maintain isolation. This will prevent incorrect updates to the database when concurrent users are making requests. For instance, adding two different projects but with the same titles which then violates the constraint of project titles being unique. The transaction would be able to control which project will be added first and the other will be thrown an error that project title already exists.

7.2 Back end

7.2.1 Security

Implement SSL to encrypt the interaction between users and the server.

7.3 Front end

7.3.1 Interface

Implement a better interface to make it easier to fund projects.

Annex A

Data Definition Language Script

Below is the DDL script inclusive of some data already created as examples.

```
10 SET SQL_MODE = "NO_AUTO_VALUE_ON_ZERO";
11 SET AUTOCOMMIT = 0;
12 START TRANSACTION;
13 SET time_zone = "+00:00";
14
15
16 /*!40101 SET @OLD_CHARACTER_SET_CLIENT=@@CHARACTER_SET_CLIENT */;
17 /*!40101 SET @OLD_CHARACTER_SET_RESULTS=@@CHARACTER_SET_RESULTS */;
18 /*!40101 SET @OLD_COLLATION_CONNECTION=@@COLLATION_CONNECTION */;
19 /*!40101 SET NAMES utf8mb4 */;
20
21 --
22 -- Database: `dreamfactory`
23 --
24
25 -- -----
26
27 --
28 -- Table structure for table `categories`
29 --
30
31 DROP TABLE IF EXISTS `categories`;
32 CREATE TABLE IF NOT EXISTS `categories` (
33   `category` varchar(32) NOT NULL,
34   PRIMARY KEY (`category`)
35 ) ENGINE=InnoDB DEFAULT CHARSET=latin1;
36
37 --
38 -- Dumping data for table `categories`
39 --
40
41 INSERT INTO `categories` (`category`) VALUES
42 ('Business'),
43 ('Ecommerce'),
44 ('Education'),
45 ('Entertainment'),
46 ('Financials'),
47 ('Food'),
48 ('Gaming'),
49 ('Media'),
50 ('Social Network'),
51 ('Technology'),
52 ('Telecommunication'),
53 ('Travel'),
54 ('Utilities');
55
56 -- -----
57
58 --
59 -- Table structure for table `fundings`
60 --
61
62 DROP TABLE IF EXISTS `fundings`;
63 CREATE TABLE IF NOT EXISTS `fundings` (
64   `user_id` int(11) NOT NULL,
65   `project_id` int(11) NOT NULL,
66   `amount` int(11) UNSIGNED NOT NULL,
67   `timestamp` timestamp NOT NULL DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
68   PRIMARY KEY (`user_id`,`project_id`),
69   KEY `user_id` (`user_id`),
70   KEY `project_id` (`project_id`)
71 ) ENGINE=InnoDB DEFAULT CHARSET=latin1;
72
73 --
```

```

74 -- Dumping data for table `fundings`
75 --
76
77 INSERT INTO `fundings` (`user_id`, `project_id`, `amount`, `timestamp`) VALUES
78 (1, 1, 2000, '2018-04-09 11:57:28'),
79 (1, 12, 34000, '2018-04-10 07:09:26'),
80 (5, 1, 12000, '2018-04-09 13:01:53'),
81 (6, 3, 25000, '2018-04-09 12:48:08'),
82 (7, 2, 9000, '2018-04-09 13:02:41'),
83 (7, 4, 4000, '2018-04-09 12:46:42'),
84 (8, 4, 34000, '2018-04-09 13:03:51'),
85 (9, 7, 7000, '2018-04-09 12:45:15'),
86 (9, 10, 5000, '2018-04-09 13:05:41'),
87 (10, 2, 2000, '2018-04-09 13:02:31'),
88 (11, 6, 7500, '2018-04-09 12:47:34'),
89 (14, 10, 230, '2018-04-09 13:04:15'),
90 (18, 10, 10000, '2018-04-09 13:04:55'),
91 (20, 2, 4500, '2018-04-09 13:04:28');
92
93 -----
94
95 --
96 -- Table structure for table `keywords`
97 --
98
99 DROP TABLE IF EXISTS `keywords`;
100 CREATE TABLE IF NOT EXISTS `keywords` (
101   `keyword` varchar(32) NOT NULL,
102   PRIMARY KEY (`keyword`)
103 ) ENGINE=InnoDB DEFAULT CHARSET=latin1;
104
105 --
106 -- Dumping data for table `keywords`
107 --
108
109 INSERT INTO `keywords` (`keyword`) VALUES
110 ('app'),
111 ('coding'),
112 ('computer'),
113 ('dating'),
114 ('delivery'),
115 ('expert'),
116 ('final'),
117 ('fire'),
118 ('food'),
119 ('funding'),
120 ('game'),
121 ('getjar'),
122 ('knowledge'),
123 ('loop'),
124 ('money'),
125 ('music'),
126 ('project'),
127 ('score'),
128 ('sky'),
129 ('song'),
130 ('travel');
131
132 -----
133
134 --
135 -- Table structure for table `projects`
136 --
137
138 DROP TABLE IF EXISTS `projects`;
139 CREATE TABLE IF NOT EXISTS `projects` (
140   `project_id` int(11) NOT NULL AUTO_INCREMENT,
141   `user_id` int(11) NOT NULL,
142   `title` varchar(256) NOT NULL,
143   `image_url` varchar(256) DEFAULT NULL,
144   `description` varchar(1024) NOT NULL,
145   `end_datetime` datetime NOT NULL,
146   `category` varchar(32) NOT NULL,

```

```

147     `funding_goal` int(11) NOT NULL,
148     PRIMARY KEY (`project_id`),
149     UNIQUE KEY `title` (`title`),
150     KEY `category` (`category`),
151     KEY `user_id` (`user_id`)
152 ) ENGINE=InnoDB AUTO_INCREMENT=20 DEFAULT CHARSET=latin1;
153
154 --
155 -- Dumping data for table `projects`
156 --
157
158 INSERT INTO `projects` (`project_id`, `user_id`, `title`, `image_url`, `description`,
159 `end_datetime`, `category`, `funding_goal`) VALUES
160 (1, 3, 'Moolah',
161 'https://www.shareicon.net/data/128x128/2016/06/30/788748_notes_512x512.png',
162 'Financing company', '2018-02-28 00:00:00', 'Financials', 12000),
163 (2, 5, 'Skyrocket',
164 'https://i.pinimg.com/564x/6d/a8/13/6da813bbec754b95ba5bb72b1a61eca9.jpg', 'Educating
165 business', '2018-03-10 00:00:00', 'Education', 10000),
166 (3, 4, 'Gimmefood',
167 'https://www.shareicon.net/download/2016/09/02/824429_fork_512x512.png', 'Food
168 Delivery Company', '2018-12-31 00:00:00', 'Food', 340000),
169 (4, 6, 'Helloworld',
170 'http://icons.iconarchive.com/icons/dtafonso/modern-xp/256/ModernXP-73-Globe-icon.png',
171 'Coding class start up', '2018-02-28 00:00:00', 'Education', 30000),
172 (5, 7, 'Mixcloud',
173 'http://icons.iconarchive.com/icons/dtafonso/yosemite-flat/512/Music-icon.png',
174 'Music record start up', '2018-04-03 00:00:00', 'Entertainment', 70000),
175 (6, 8, 'Dating Life',
176 'https://ih1.redbubble.net/image.30156406.3433/sticker,375x360-bg,ffffff.png', 'Dating
177 enhancement application the start up is focusing on', '2018-12-28 00:00:00', 'Social
178 Network', 50000),
179 (7, 9, 'Foodies Deliver',
180 'https://www.shareicon.net/download/2016/11/25/856584_food_512x512.png', 'Start up
181 doing food delivery services', '2018-12-19 00:00:00', 'Food', 60000),
182 (8, 1, 'Crossknowledge', 'https://png.icons8.com/ios/1600/knowledge-sharing.png',
183 'Education start up', '2018-06-28 00:00:00', 'Education', 37000),
184 (9, 10, 'Funding Circle',
185 'https://labs.robinhood.org/wp-content/uploads/2015/07/FUNDING.png?x94397', 'VC
186 company for smaller entrepreneurs', '2018-12-17 00:00:00', 'Financials', 57000),
187 (10, 11, 'Songkick',
188 'https://png.pngtree.com/element_origin_min_pic/16/08/30/2057c5817bcf859.jpg', 'Music
189 industry entertainment', '2018-01-03 00:00:00', 'Entertainment', 12000),
190 (11, 16, 'Songtify',
191 'https://upload.wikimedia.org/wikipedia/en/thumb/a/af/Song_logo.svg/1200px-Song_logo.svg
192 .png', 'Music streaming services company', '2018-12-27 00:00:00', 'Media', 80000),
193 (12, 19, 'Experteer',
194 'https://www.shareicon.net/download/2016/07/03/790220_school_512x512.png', 'Education
195 that offers any course.', '2019-04-26 00:00:00', 'Education', 124000),
196 (13, 5, 'GetJar', 'https://png.icons8.com/color/1600/cash-in-hand.png', 'Saving
197 investments for you', '2019-04-20 00:00:00', 'Financials', 65000),
198 (14, 8, 'Game3D',
199 'https://png.pngtree.com/element_pic/16/11/22/56551424a96d8b34d760f5c4fc338e07.jpg',
200 'Gaming VR company', '2020-04-12 00:00:00', 'Gaming', 140000),
201 (15, 6, 'Scoreloop',
202 'https://cdn4.iconfinder.com/data/icons/flat-icon-set/2133/flat_icons-graficheria.it-13.
203 png', 'Score in our games', '2018-09-08 00:00:00', 'Gaming', 48000),
204 (16, 7, 'Appsfire',
205 'http://www.clker.com/cliparts/1/0/9/e/1487324295866254597fire-vector-icon-png-27.hi.png',
206 'Social media', '2018-10-25 00:00:00', 'Social Network', 9300),
207 (17, 21, 'Skyscanner',
208 'https://cdn.icons8.com/public/images/icon/free/png-512/aeroplane-airplane-plane-air-
209 transportation-vehicle-passenger-people-emoji-symbol-3306ff886517b0e9-512x512.png',
210 'Travelling company', '2018-08-18 00:00:00', 'Travel', 9000);
211
212 --
213 --
214 -- Table structure for table `project_keywords`
215 --
216
217 DROP TABLE IF EXISTS `project_keywords`;
218 CREATE TABLE IF NOT EXISTS `project_keywords` (

```

```

195     `project_id` int(11) NOT NULL,
196     `keyword` varchar(32) NOT NULL,
197     PRIMARY KEY (`project_id`,`keyword`),
198     KEY `project_id` (`project_id`),
199     KEY `keyword` (`keyword`)
200 ) ENGINE=InnoDB DEFAULT CHARSET=latin1;
201
202 --
203 -- Dumping data for table `project_keywords`
204 --
205
206 INSERT INTO `project_keywords` (`project_id`, `keyword`) VALUES
207 (1, 'money'),
208 (2, 'money'),
209 (3, 'delivery'),
210 (3, 'food'),
211 (4, 'coding'),
212 (4, 'computer'),
213 (5, 'coding'),
214 (5, 'computer'),
215 (6, 'dating'),
216 (7, 'delivery'),
217 (7, 'food'),
218 (8, 'knowledge'),
219 (9, 'funding'),
220 (10, 'music'),
221 (10, 'song'),
222 (11, 'song'),
223 (12, 'expert'),
224 (13, 'getjar'),
225 (14, 'game'),
226 (15, 'loop'),
227 (15, 'score'),
228 (16, 'app'),
229 (16, 'fire'),
230 (17, 'sky'),
231 (17, 'travel');
232
233 -----
234
235 --
236 -- Table structure for table `users`
237 --
238
239 DROP TABLE IF EXISTS `users`;
240 CREATE TABLE IF NOT EXISTS `users` (
241   `user_id` int(11) NOT NULL AUTO_INCREMENT,
242   `email` varchar(255) NOT NULL,
243   `password_hash` varchar(64) NOT NULL,
244   `full_name` varchar(255) NOT NULL,
245   `privilege` tinyint(1) NOT NULL DEFAULT '0',
246   `session_id` varchar(32) DEFAULT NULL,
247   `session_exp` timestamp NULL DEFAULT NULL,
248   PRIMARY KEY (`user_id`),
249   UNIQUE KEY `email` (`email`)
250 ) ENGINE=InnoDB AUTO_INCREMENT=25 DEFAULT CHARSET=latin1;
251
252 --
253 -- Dumping data for table `users`
254 --
255
256 INSERT INTO `users` (`user_id`, `email`, `password_hash`, `full_name`, `privilege`,
257   `session_id`, `session_exp`) VALUES
258 (1, 'afi@cat.com', '35932720f27c684829c6b308235f47fb3394456793fce2a61deb418058b8cf7c',
259   'afi', 0, NULL, NULL),
260 (2, 'admin@admin.com', 'password', 'admin', 1, NULL, NULL),
261 (3, 'email0@email.com', 'password', 'USER0', 0, NULL, NULL),
262 (4, 'email@email.com',
263   '5e884898da28047151d0e56f8dc6292773603d0d6aabbdd62a11ef721d1542d8', 'USER1', 0, NULL,
264   NULL),
265 (5, 'email1@email.com',
266   '5e884898da28047151d0e56f8dc6292773603d0d6aabbdd62a11ef721d1542d8', 'USER2', 0, NULL,
267   NULL),

```

```

252 (6, 'email2@email.com',
    '5e884898da28047151d0e56f8dc6292773603d0d6aabbdd62a11ef721d1542d8', 'USER3', 0, NULL,
    NULL),
253 (7, 'email3@email.com',
    '5e884898da28047151d0e56f8dc6292773603d0d6aabbdd62a11ef721d1542d8', 'USER4', 0, NULL,
    NULL),
254 (8, 'email4@email.com',
    '5e884898da28047151d0e56f8dc6292773603d0d6aabbdd62a11ef721d1542d8', 'USER5', 0, NULL,
    NULL),
255 (9, 'email5@email.com',
    '5e884898da28047151d0e56f8dc6292773603d0d6aabbdd62a11ef721d1542d8', 'USER6', 0, NULL,
    NULL),
256 (10, 'email6@email.com',
    '5e884898da28047151d0e56f8dc6292773603d0d6aabbdd62a11ef721d1542d8', 'USER7', 0, NULL,
    NULL),
257 (11, 'email7@email.com',
    '5e884898da28047151d0e56f8dc6292773603d0d6aabbdd62a11ef721d1542d8', 'USER8', 0, NULL,
    NULL),
258 (12, 'user@email.com',
    '5e884898da28047151d0e56f8dc6292773603d0d6aabbdd62a11ef721d1542d8', 'Amy', 0, NULL,
    NULL),
259 (13, 'user1@email.com',
    '5e884898da28047151d0e56f8dc6292773603d0d6aabbdd62a11ef721d1542d8', 'Betty', 0, NULL,
    NULL),
260 (14, 'candice@email.com',
    '5e884898da28047151d0e56f8dc6292773603d0d6aabbdd62a11ef721d1542d8', 'Candice', 0,
    NULL, NULL),
261 (15, 'danny@email.com',
    '5e884898da28047151d0e56f8dc6292773603d0d6aabbdd62a11ef721d1542d8', 'Danny', 0, NULL,
    NULL),
262 (16, 'elizabeth@email.com',
    '5e884898da28047151d0e56f8dc6292773603d0d6aabbdd62a11ef721d1542d8', 'Elizabeth', 0,
    NULL, NULL),
263 (17, 'faith@email.com',
    '5e884898da28047151d0e56f8dc6292773603d0d6aabbdd62a11ef721d1542d8', 'Faith', 0, NULL,
    NULL),
264 (18, 'gary@email.com',
    '5e884898da28047151d0e56f8dc6292773603d0d6aabbdd62a11ef721d1542d8', 'Gary', 0, NULL,
    NULL),
265 (19, 'harry@email.com',
    '5e884898da28047151d0e56f8dc6292773603d0d6aabbdd62a11ef721d1542d8', 'Harry', 0, NULL,
    NULL),
266 (20, 'ivy@email.com',
    '5e884898da28047151d0e56f8dc6292773603d0d6aabbdd62a11ef721d1542d8', 'Ivy', 0, NULL,
    NULL),
267 (21, 'june@email.com',
    '5e884898da28047151d0e56f8dc6292773603d0d6aabbdd62a11ef721d1542d8', 'June', 0, NULL,
    NULL),
268 (22, 'kane@email.com',
    '5e884898da28047151d0e56f8dc6292773603d0d6aabbdd62a11ef721d1542d8', 'Kane', 0, NULL,
    NULL),
269 (23, 'zachary@email.com',
    '5e884898da28047151d0e56f8dc6292773603d0d6aabbdd62a11ef721d1542d8', 'Zachary', 0,
    NULL, NULL),
270 (24, 'user100@email.com',
    '5e884898da28047151d0e56f8dc6292773603d0d6aabbdd62a11ef721d1542d8', 'user100', 0,
    NULL, NULL);
271
272 --
273 -- Constraints for dumped tables
274 --
275
276 --
277 -- Constraints for table `fundings`
278 --
279 ALTER TABLE `fundings`
280   ADD CONSTRAINT `fk_fundings_projects_project_id` FOREIGN KEY (`project_id`)
    REFERENCES `projects` (`project_id`) ON DELETE CASCADE ON UPDATE CASCADE,
281   ADD CONSTRAINT `fk_fundings_users_user_id` FOREIGN KEY (`user_id`) REFERENCES
    `users` (`user_id`) ON DELETE CASCADE ON UPDATE CASCADE;
282
283 --
284 -- Constraints for table `projects`

```

```

285 --
286 ALTER TABLE `projects`
287   ADD CONSTRAINT `fk_projects_categories_category` FOREIGN KEY (`category`) REFERENCES
288     `categories` (`category`) ON UPDATE CASCADE,
289   ADD CONSTRAINT `fk_projects_users_user_id` FOREIGN KEY (`user_id`) REFERENCES
290     `users` (`user_id`) ON DELETE CASCADE ON UPDATE CASCADE;
291 --
292 -- Constraints for table `project_keywords`
293 --
294 ALTER TABLE `project_keywords`
295   ADD CONSTRAINT `fk_project_keywords_keywords_keyword` FOREIGN KEY (`keyword`)
296     REFERENCES `keywords` (`keyword`) ON DELETE CASCADE ON UPDATE CASCADE,
297   ADD CONSTRAINT `fk_project_keywords_projects_project_id` FOREIGN KEY (`project_id`)
298     REFERENCES `projects` (`project_id`) ON DELETE CASCADE ON UPDATE CASCADE;
299 COMMIT;
300
301 /*!40101 SET CHARACTER_SET_CLIENT=@OLD_CHARACTER_SET_CLIENT */;
302 /*!40101 SET CHARACTER_SET_RESULTS=@OLD_CHARACTER_SET_RESULTS */;
303 /*!40101 SET COLLATION_CONNECTION=@OLD_COLLATION_CONNECTION */;
304

```

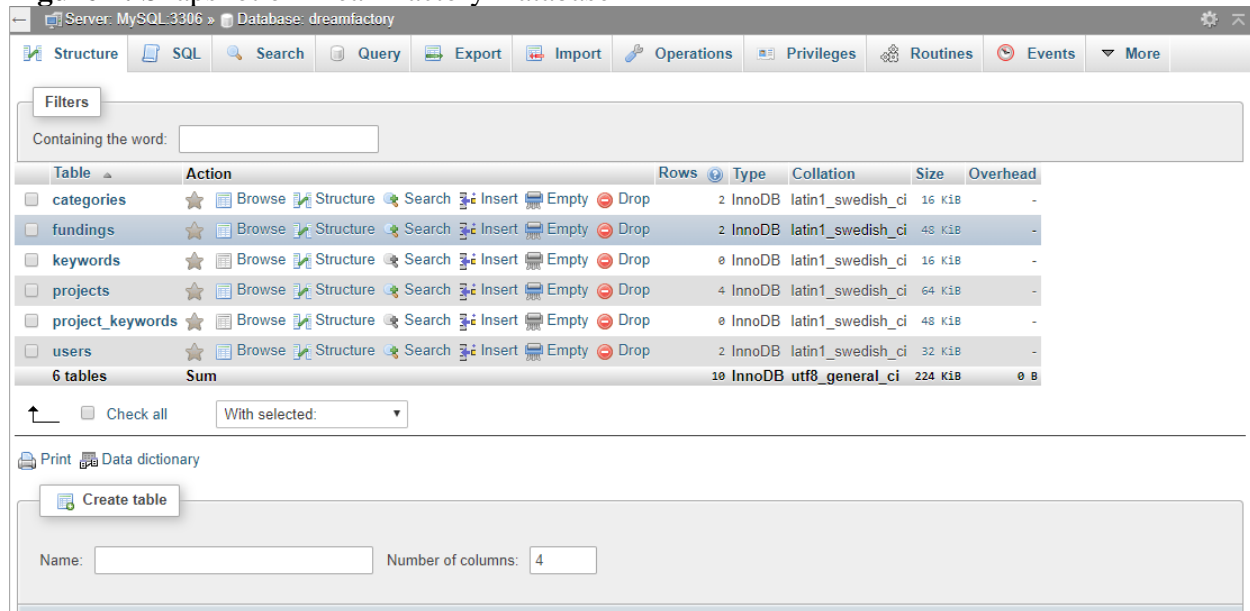

Annex B

Tables and Figures of the Main Report

Table 1: Breakdown of tiers in DreamFactory

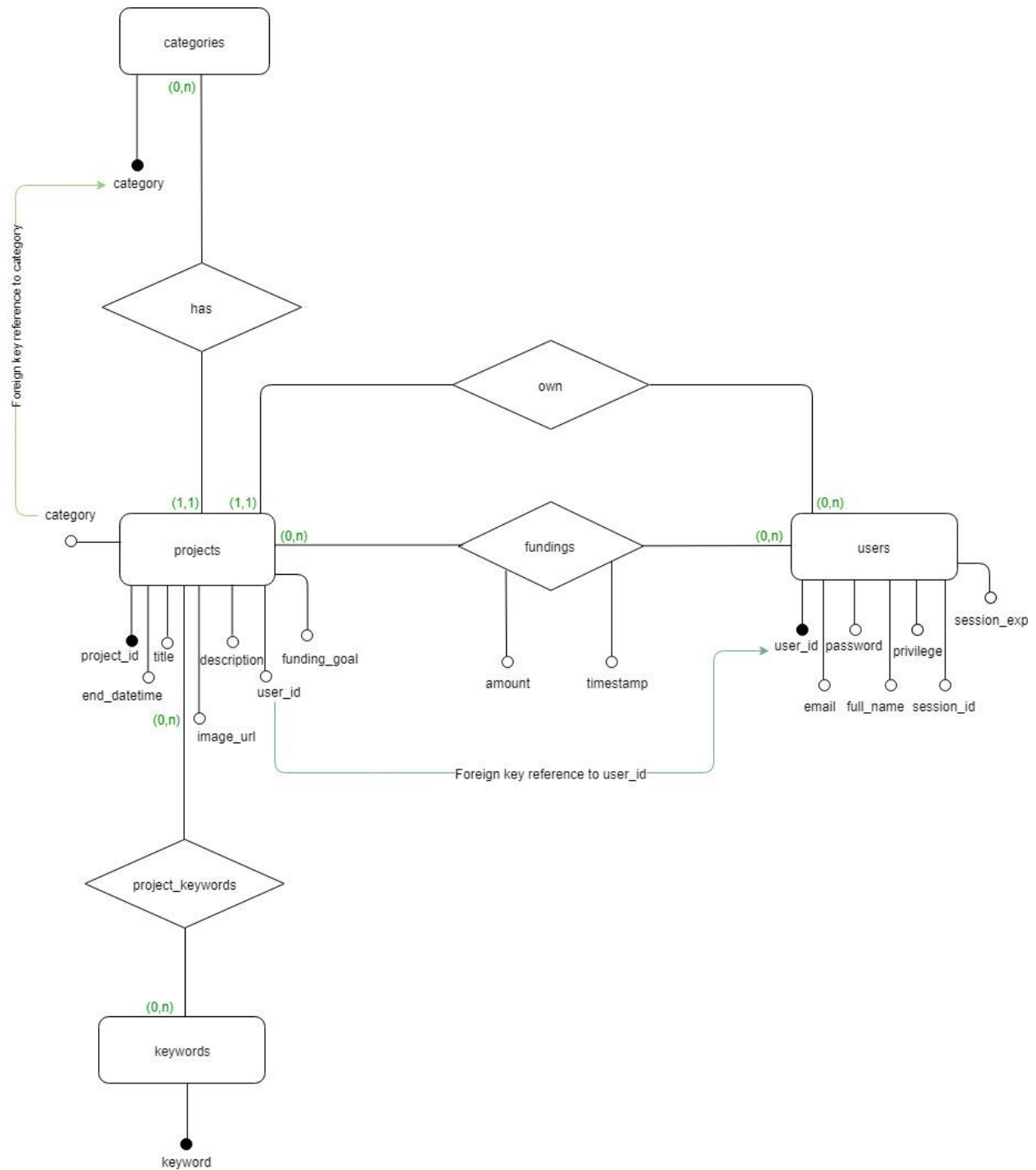
Presentation Tier	Web Page	HTML
Logic Tier	Software Components	Apache WebServer
		PHP, HTML5, Javascript
Database Tier	Database	MySQL
		PHPMyAdmin

Figure 1: Snapshot of DreamFactory Database



Annex C

Entity Relationship Diagram



Annex D

Webpage Screenshots

Figure 2: Homepage



Figure 3: Ongoing Projects displayed in Homepage

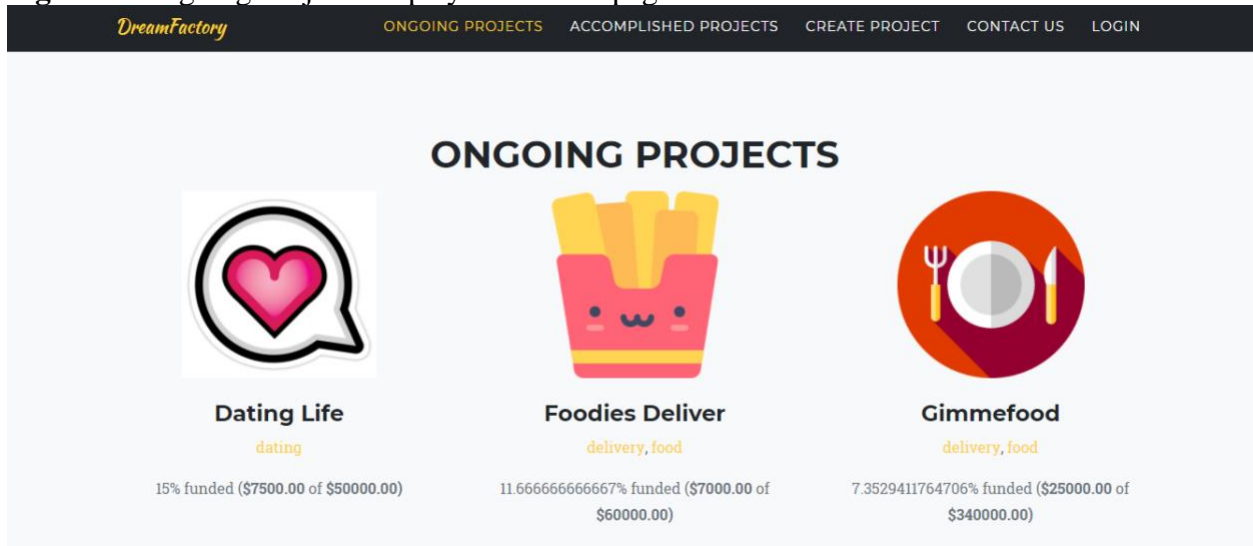


Figure 4: Search and Ongoing Projects in Browse Projects Page

The screenshot shows the DreamFactory website interface. At the top, there is a navigation bar with the DreamFactory logo and links for ONGOING PROJECTS, FUNDED PROJECTS, CREATE PROJECT, and LOGIN. Below the navigation bar, there is a search bar with the placeholder text "Search:". The main content area is titled "ONGOING PROJECTS" and displays a table of ongoing projects.

Title	Category	Keywords	Fundings	Goal	Deadline	Fund	Delete	
Dating Life	Social Network	dating	7500	50000	2018-12-28 00:00:00	+	X	VIEW
Foodies Deliver	Food	delivery, food	7000	60000	2018-12-19 00:00:00	+	X	VIEW
Gimmefood	Food	delivery, food	25000	340000	2018-12-31 00:00:00	+	X	VIEW
Crossknowledge	Education	knowledge	0	37000	2018-06-28 00:00:00	+	X	VIEW
Funding Circle	Financials	funding	0	57000	2018-12-17 00:00:00	+	X	VIEW
Songtify	Media	song	0	80000	2018-12-27 00:00:00	+	X	VIEW
Experteer	Education	expert	0	124000	2019-04-26 00:00:00	+	X	VIEW
GetJar	Financials	getjar	0	65000	2019-04-20 00:00:00	+	X	VIEW
Game3D	Gaming	game	0	140000	2020-04-12 00:00:00	+	X	VIEW

Figure 5: Funded Projects in Browse Projects Page

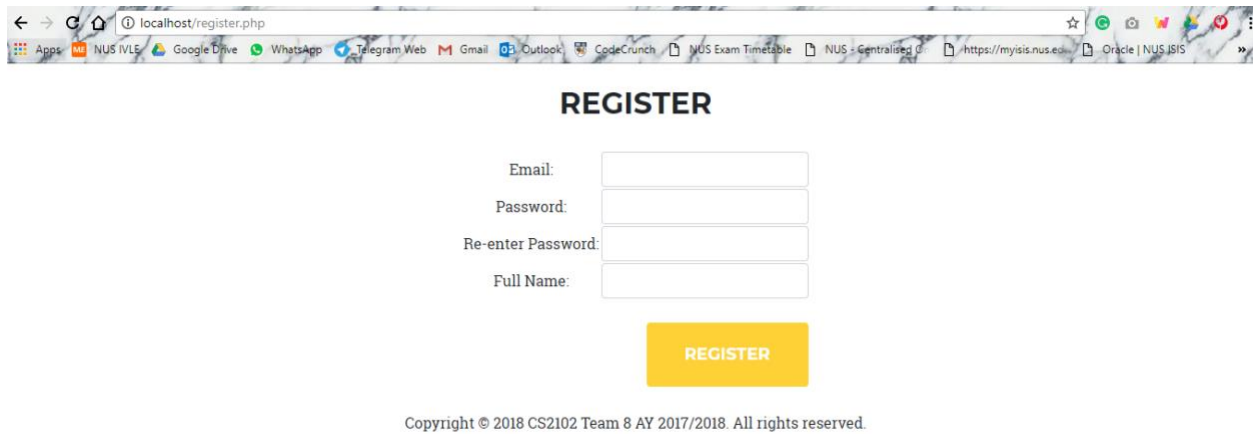
The screenshot shows the DreamFactory website interface. At the top, there is a navigation bar with the DreamFactory logo and links for ONGOING PROJECTS, FUNDED PROJECTS, CREATE PROJECT, and LOGIN. Below the navigation bar, there is a section titled "FUNDED PROJECTS" which displays a table of funded projects.

Title	Category	Keywords	Fundings	Goal	Deadline	Fund	Delete	
Skyrocket	Education	money	15500	10000	2018-03-10 00:00:00	+	X	VIEW
Moolah	Financials	money	14000	12000	2018-02-28 00:00:00	+	X	VIEW
Helloworld	Education	coding, computer	38000	30000	2018-02-28 00:00:00	+	X	VIEW
Songkick	Entertainment	music, song	15230	12000	2018-01-03 00:00:00	+	X	VIEW

Figure 6: Login Page

The screenshot shows the DreamFactory website interface. At the top, there is a navigation bar with the DreamFactory logo and links for ONGOING PROJECTS, FUNDED PROJECTS, CREATE PROJECT, and LOGIN. Below the navigation bar, there is a section titled "LOGIN" which contains a form for logging in. The form has fields for Email and Password, and a LOGIN button. Below the form, there is a link for "Have not registered?". At the bottom, there is a copyright notice: "Copyright © 2018 CS2102 Team 8 AY 2017/2018. All rights reserved."

Figure 7: Register Page



The screenshot shows a web browser window with the address bar displaying 'localhost/register.php'. The page has a light blue background with a subtle pattern. At the top, the word 'REGISTER' is centered in a bold, black, sans-serif font. Below it, there are four input fields stacked vertically, each with a label to its left: 'Email:', 'Password:', 'Re-enter Password:', and 'Full Name:'. A yellow button with the text 'REGISTER' in black is positioned below the input fields. At the bottom of the page, a copyright notice reads: 'Copyright © 2018 CS2102 Team 8 AY 2017/2018. All rights reserved.'

localhost/register.php

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REGISTER

Email:

Password:

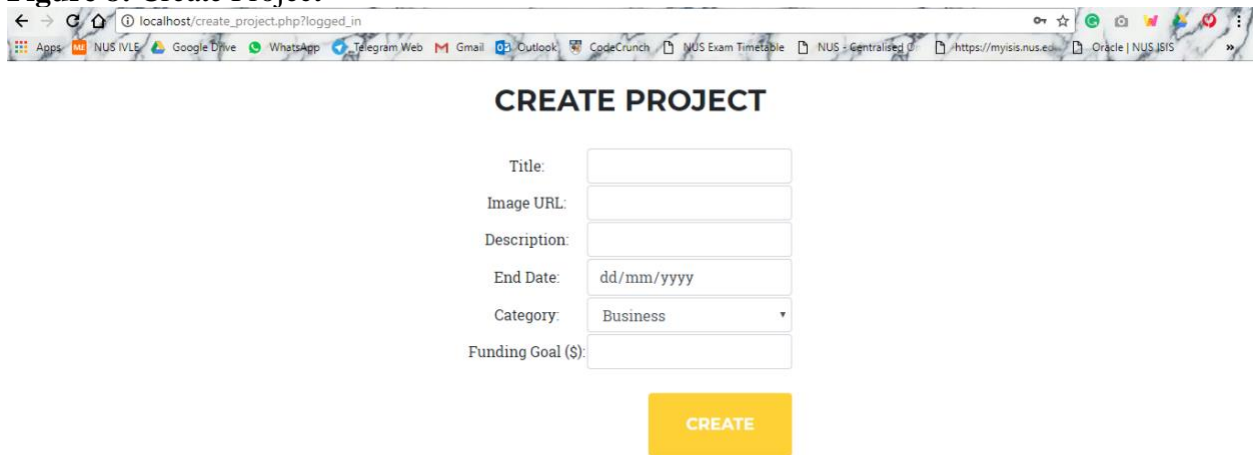
Re-enter Password:

Full Name:

REGISTER

Copyright © 2018 CS2102 Team 8 AY 2017/2018. All rights reserved.

Figure 8: Create Project



The screenshot shows a web browser window with the address bar displaying 'localhost/create_project.php?logged_in'. The page has a light blue background with a subtle pattern. At the top, the words 'CREATE PROJECT' are centered in a bold, black, sans-serif font. Below it, there are six input fields stacked vertically, each with a label to its left: 'Title:', 'Image URL:', 'Description:', 'End Date:', 'Category:', and 'Funding Goal (\$)'. The 'End Date' field has a placeholder 'dd/mm/yyyy'. The 'Category' field is a dropdown menu with 'Business' selected. A yellow button with the text 'CREATE' in black is positioned below the input fields.

localhost/create_project.php?logged_in

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CREATE PROJECT

Title:

Image URL:

Description:

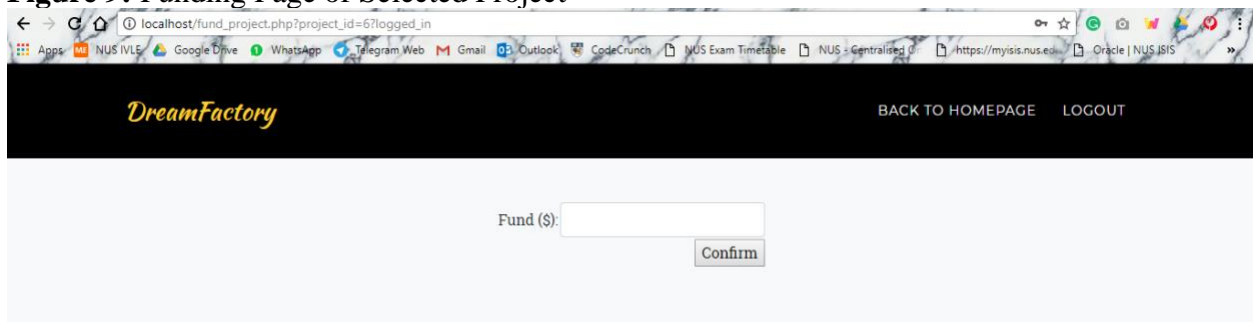
End Date:

Category:

Funding Goal (\$):

CREATE

Figure 9: Funding Page of Selected Project



The screenshot shows a web browser window with the address bar displaying 'localhost/fund_project.php?project_id=67&logged_in'. The page has a dark blue header bar. On the left side of the header, the text 'DreamFactory' is written in a yellow, cursive font. On the right side of the header, there are two links: 'BACK TO HOMEPAGE' and 'LOGOUT'. Below the header, there is a light blue background with a subtle pattern. In the center, there is a label 'Fund (\$):' followed by an input field. To the right of the input field is a grey button with the text 'Confirm' in black.

localhost/fund_project.php?project_id=67&logged_in

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DreamFactory BACK TO HOMEPAGE LOGOUT

Fund (\$):

Confirm

Figure 10 : View Project

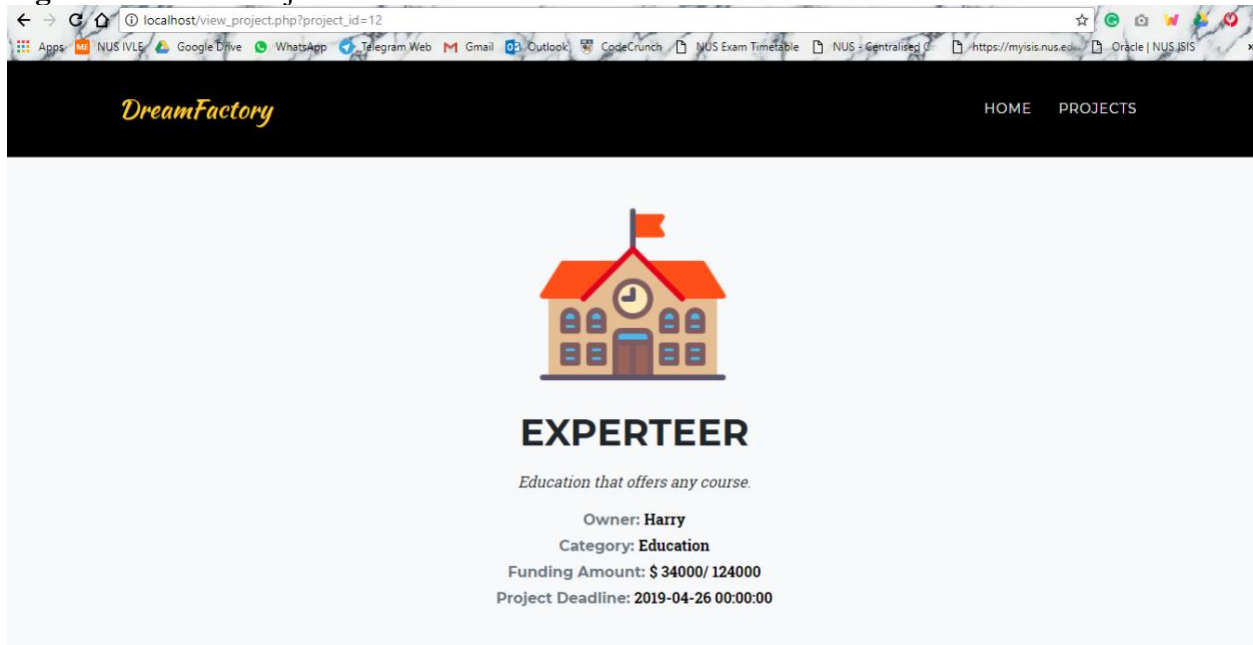
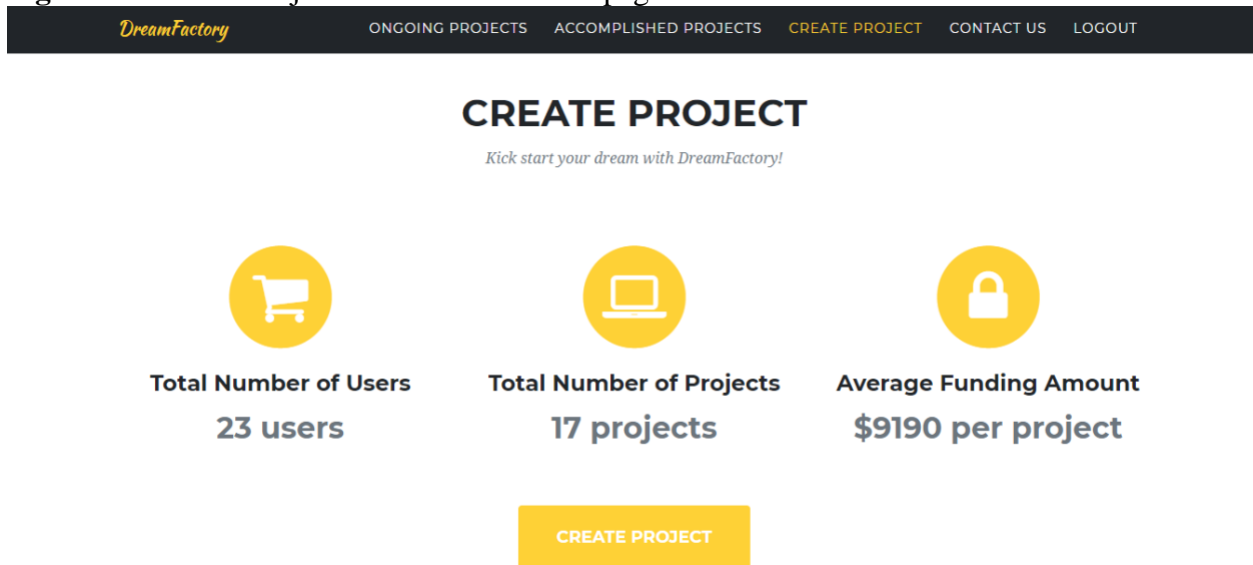


Figure 11: Create Project section under Homepage



Annex E

Data Manipulation Language Script

Figure 12: Funded Projects DML Snippet

```
1  SELECT
2      p.project_id,
3      title,
4      category,
5      kl.keyword_links AS keyword_links,
6      COALESCE(f.fundings, 0) AS funding_amount,
7      funding_goal,
8      end_datetime
9  FROM
10     projects p LEFT JOIN
11     (SELECT
12         project_id,
13         GROUP_CONCAT(CONCAT(keyword) SEPARATOR ', ') AS keyword_links
14     FROM
15         project_keywords
16     GROUP BY
17         project_id) AS kl ON p.project_id = kl.project_id LEFT JOIN
18     (SELECT
19         project_id,
20         SUM(amount) AS fundings
21     FROM
22         fundings
23     GROUP BY
24         project_id) AS f ON p.project_id = f.project_id
25 WHERE
26     p.end_datetime <= CURDATE() AND
27     COALESCE(f.fundings, 0) >= p.funding_goal
28 ORDER BY
29     end_datetime DESC;
```

Figure 13: Ongoing Projects DML Snippet

```
1  SELECT
2      p.project_id,
3      title,
4      category,
5      kl.keyword_links AS keyword_links,
6      COALESCE(f.fundings, 0) AS funding_amount,
7      funding_goal,
8      end_datetime
9  FROM
10     projects p LEFT JOIN
11     (SELECT
12         project_id,
13         GROUP_CONCAT(CONCAT('<a href=?keyword=', keyword, '>', keyword, '</a>')
14             SEPARATOR ', ') AS keyword_links
15     FROM
16         project_keywords
17     GROUP BY
18         project_id) AS kl ON p.project_id = kl.project_id LEFT JOIN
19     (SELECT
20         project_id,
21         SUM(amount) AS fundings
22     FROM
23         fundings
24     GROUP BY
25         project_id) AS f ON p.project_id = f.project_id
26 WHERE
27     p.end_datetime > CURDATE()
28 ORDER BY
29     COALESCE(f.fundings, 0) * 1.0 / funding_goal DESC;
```