# RUP Artifact

# for

# BiProductive

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**25.08.2021**

**link to GitHub repository:**
**https://github.com/rizvansky/biproductive.git**

# Version History

| Editor's Name | Date (DD/MM/YYYY) | Reason for Changes/Sections Updated | Version |
|---|---|---|---|
| Maxim Faleev | 25.08.2021 | Initialization | 0.1 |
| Maxim Faleev, Shamil Arslanov, Rizvan Iskaliev | 04.09.2021 | Milestone 1 | 0.1 |
| Maxim Faleev, Shamil Arslanov, Rizvan Iskaliev | 25.09.2021 | Milestone 2 | 0.2 |
| Maxim Faleev, Shamil Arslanov, Rizvan Iskaliev | 10.10.2021 | Gamma Delivery | 1.0 |

# Table of Contents

# 1. Stakeholders and their roles

| Stakeholder's Name | Roles | Responsibilities |
|---|---|---|
| Web developers | Frontend developer, backend developer, DevOps engineer | Creating frontend and backend of web-application; connecting ML model to back-end; testing code; deployment |
| Data Scientist | Data Scientist | Creating the model for hypothesis testing; adjusting the model to the user's needs |
| Product owner | Product owner | Identifying business goals and objectives; project validation |
| Web user | Users | Using product |

# 2. Functional requirements

| | |
|---|---|
| 1 | Registration of a new user |
| 2 | Log in to the system via personal credentials |
| 3 | Habit creation |
| 4 | Habit tracking |
| 5 | Evaluation of the effect of a user's habits on his productivity and mental abilities |
| 6 | Defining the dependencies between the habit completion and productivity. |
| 7 | Report the user about statistically significant dependencies between the habits and the productivity both online and in the downloadable report. |

# 3. User Stories

| User type | User Story Title | User stories |
|---|---|---|
| Web user | Registration | As a user, I can register into the application by entering my email password and confirming the password so I could have a private account.<br>As a user, I want to reset my password using my email address. |
| | Login | As a user, I want to login into the application by entering my credentials so I could access my private account. |
| | Habit creation | As a user, I want to create new habit in the application and start tracking it so I could manage current habits. |
| | Habit tracking | As a user, I want to collect statistics about habits (mark if the user spent time for his habit during the day or not). |
| | Productivity check | As a user, I want to be able to objectively assess my productivity through a simple problem in a short amount of time. |
| | Dashboard with statistics | As a user, I want to see statistics about my habits and information on how well habits influence productivity so I could pay more attention to the most important of them. |
| | Correlation analysis | As a user, I want to see how well the habits change my productivity. |
| | Report with statistics | As a user, I want to export my previous statistics about habits and personal recommendations about habits. |
| Web developer | Code testing | As a backend developer, I want to test my code using simple operations. |
| | Productivity check game | As a frontend developer, I want to use already written productivity check game instead of writing my own game. |
| | Deployment | As a DevOps engineer, I want to deploy the application using Docker. |
| Data Scientist | Habit information | As a data scientist, I want to have an information about the habit completion or non-completion and about the absence of data. |
| Product owner | Production | As a product owner, I want the application to be hosted freely. |

# 4. Non-functional requirements

| NFR | Sub-Characteristics | How will you achieve it |
|---|---|---|
| **Usability** | Simplicity | All forms in login and registration pages should have a label |
| **Performance** | Speed | Use algorithms with time complexity not greater than O(n). Use lightweight libraries |
| **Availability** | High uptime proportion | Deploy the application on the remote host |
| **Reliability** | Recommendations accuracy | Significance level should be less than 0.05 |
| **Security** | Authenticity | User account creation using email and password |

# 5. Business Goals and Objectives

| | |
|---|---|
| 1 | Create an application which can evaluate the effect of a user's habits on his productivity and mental abilities. |
| 2 | The user should be able to create his habits and to track their usage. |
| 3 | The user should be able to objectively evaluate his productivity in a small amount of time. |
| 4 | The application should define statistically significant dependencies between the habits and the productivity and report the user about it in simple words, without requiring statistical knowledge. |
| 5 | The application should be easy to start. |

# 6. Project glossary

| Term | Description |
|---|---|
| Productivity | Result of evaluation of the user's mental abilities after testing by productivity check application |
| Habit tracking | Telling the system that the user performed the habit |
| Productivity check | Application that tests user’s mental abilities by playing games |
| Correlation analysis | Process of relationships’ analysis |
| Statistically significant dependency | Dependency confirmed by the hypothesis testing |
| Hypothesis testing | Defining the plausibility of the observed pattern with the usage of statistically justified methods |

# 7. Requirement Analysis and Specifications

## 7.1. Features

| ID # | User Story Title | Priority | Any Other Label |
|---|---|---|---|
| **1** | Registering in web-application by providing username, email and double-entering password | Must | |
| **2** | Login with username and password for the user, registered in the web application | Must | |
| **3** | Creating a habit that will be tracked by providing its name | Must | |
| **4** | Filling the habits usage in the last day | Must | |
| **5** | Test brain performance of user by playing web-game | Must | |
| **6** | Computing the importance of each habit with the correlation analysis | Must | |
| **7** | Visualization of collected from user statistics about the habit | Optional | |
| **8** | Generation of the report with statistics | Optional | |

# 8. Software Development plan

| Inception Phase | | | | |
|---|---|---|---|---|
| **#Iteration** | **Timeline** | **Stakeholders** | **Activities** | **Artifacts** |
| **#1** | 24/08/2021<br>-<br>27/08/2021 | Developers<br>Product owner | Determine main objectives and optional objectives<br>Identify the stakeholders<br>Establish roles and responsibilities<br>GitHub repository initialization | Notion file with roles and milestones<br>GitHub repository<br>Initial README file |
| **#2** | 28/08/2021<br>-<br>06/09/2021 | Developers<br>Product owner | Requirement engineering<br>Software development planning<br>Software Architecture design<br>Initialize simple web-application | User stories<br>Use case diagrams<br>Non-functional requirements<br>Software development plan<br>UML diagrams<br>Web-application with minimal functionality |

| Elaboration Phase | | | | |
|---|---|---|---|---|
| **#Iteration** | **Timeline** | **Stakeholders** | **Activities** | **Artifacts** |
| **#1** | 07/09/2021<br>-<br>13/09/2021 | Developers<br>Product owner | Implement registration and login<br>Implement correlation analysis algorithm<br>Revise 100% user stories | Registration and login<br>Correlation analysis algorithm<br>100% user stories |
| **#2** | 14/09/2021<br>-<br>20/09/2021 | Developers | Implement habit creation and tracking<br>Unit tests for registration and login<br>Unit tests for habit creation and tracking | Habit creation and tracking<br>Unit test results for registration, login and habit processing |

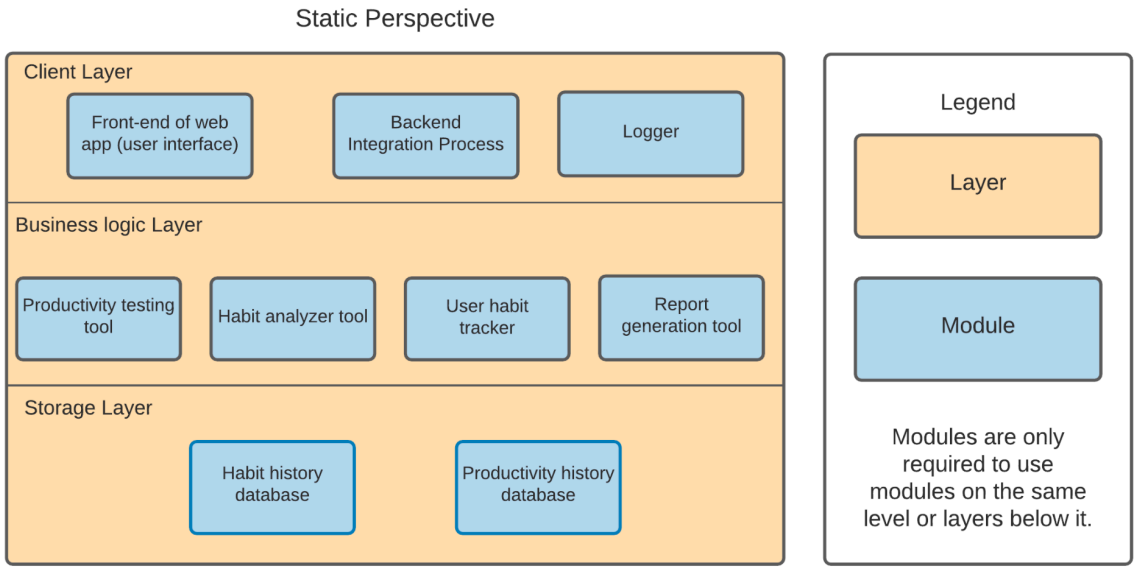
| Construction Phase | | | | |
|---|---|---|---|---|
| **#Iteration** | **Timeline** | **Stakeholders** | **Activities** | **Artifacts** |
| **#1** | 21/09/2021<br>-<br>27/09/2021 | Developers | Implement productivity check<br>Unit tests for productivity check<br>Connect correlation analysis to productivity check and habit tracking | Productivity check<br>Web application, satisfying the must-have user stories |

| | | | | |
|---|---|---|---|---|
| | | | services | |
| **#2** | 28/09/2021 - 03/10/2021 | Developers | Adjust the correlation analysis to NFR<br>Add dashboard with statistics<br>Add possibility to make report with statistics<br>Unit tests for dashboard and report | Unbiased correlation analysis algorithm<br>Unit tests results |

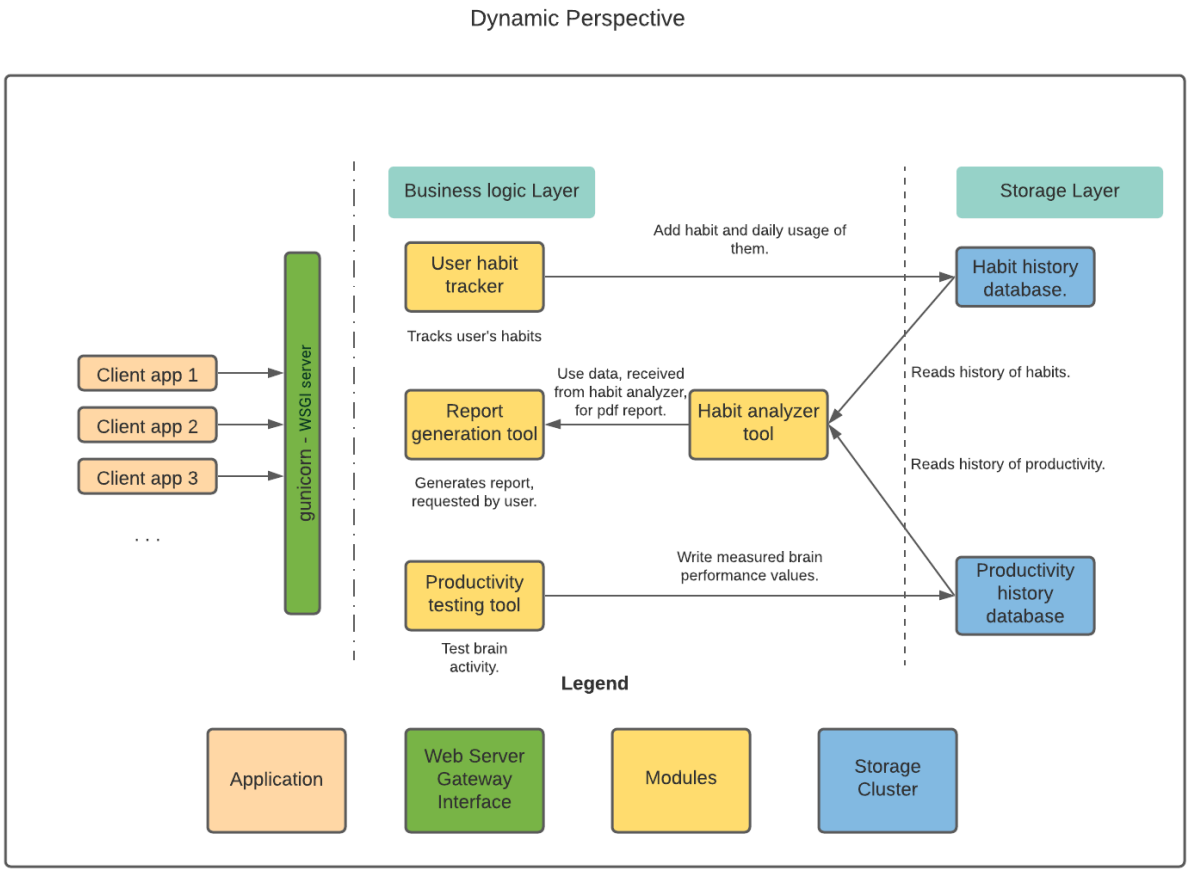
| **Transition Phase** | | | | |
|---|---|---|---|---|
| **#Iteration** | **Timeline** | **Stakeholders** | **Activities** | **Artifacts** |
| **#1** | 04/10/2021 - 10/10/2021 | Developers<br>Users | Integration, End to end testing<br>Improve the application to satisfy NFR requirements | Github repository<br>Integration and ended to end test results<br>NFR requirements completion<br>Final README for developers and Users |
| **#2** | 11/10/2021- 15/10/2021 | Developers<br>Users | Final product release | Working Product |

# 9. Architecture

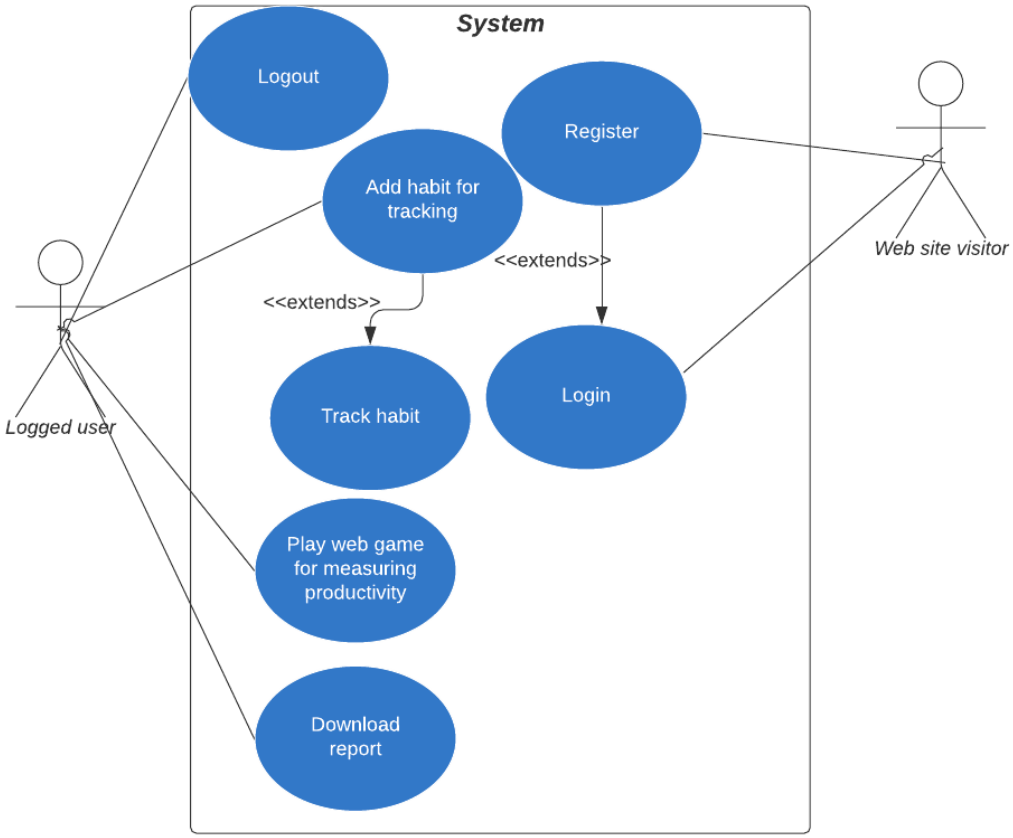
## 9.1. Static view



## 9.2. Dynamic view




## 9.3 User case diagram




# Appendix

1. Testing environment
   Client side: Acer Aspire E5-575G with Intel Core i7-7500U, 12 GB of DDR4-SDRAM, Wi-Fi 5 (802.11ac)
   Server side: Heroku platform “Free” with 512 MB of RAM

2. Screenshot, demonstrating output of running python linter on our project (there are warnings about line length, but these warnings are made in migrations, that are generated automatically and not recommended to change them) .

```
(dds) [shamil@shamil-hpprobook430g7 biproductive]$ flake8
./productivity/migrations/0001_initial.py:20:101: E501 line too long (114 > 100 characters)
./productivity/migrations/0001_initial.py:23:101: E501 line too long (118 > 100 characters)
(dds) [shamil@shamil-hpprobook430g7 biproductive]$
```