**Sports Center Management System – Software Design Document**

1. **Revision History**

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| --- | --- | --- | --- |
| *Version* | *Date* | *Author* | *Change Description* |
| 1.0 | 19/04/2018 | Ali Şahin Balıkçı | SDD template is created. |
| 1.1 | 22/04/2018 | Ali Şahin Balıkçı  İhsan Baran Sönmez  Merve Gül Kantarcı  Ömer Faruk Çifci  Sena Berre Ceylan | Sequence diagrams added. |
| 1.2 | 24/04/2018 | Ali Şahin Balıkçı  İhsan Baran Sönmez  Merve Gül Kantarcı  Ömer Faruk Çifci  Sena Berre Ceylan | Interfaces added |

1. **Introduction**

*2.1 Purpose and Scope*

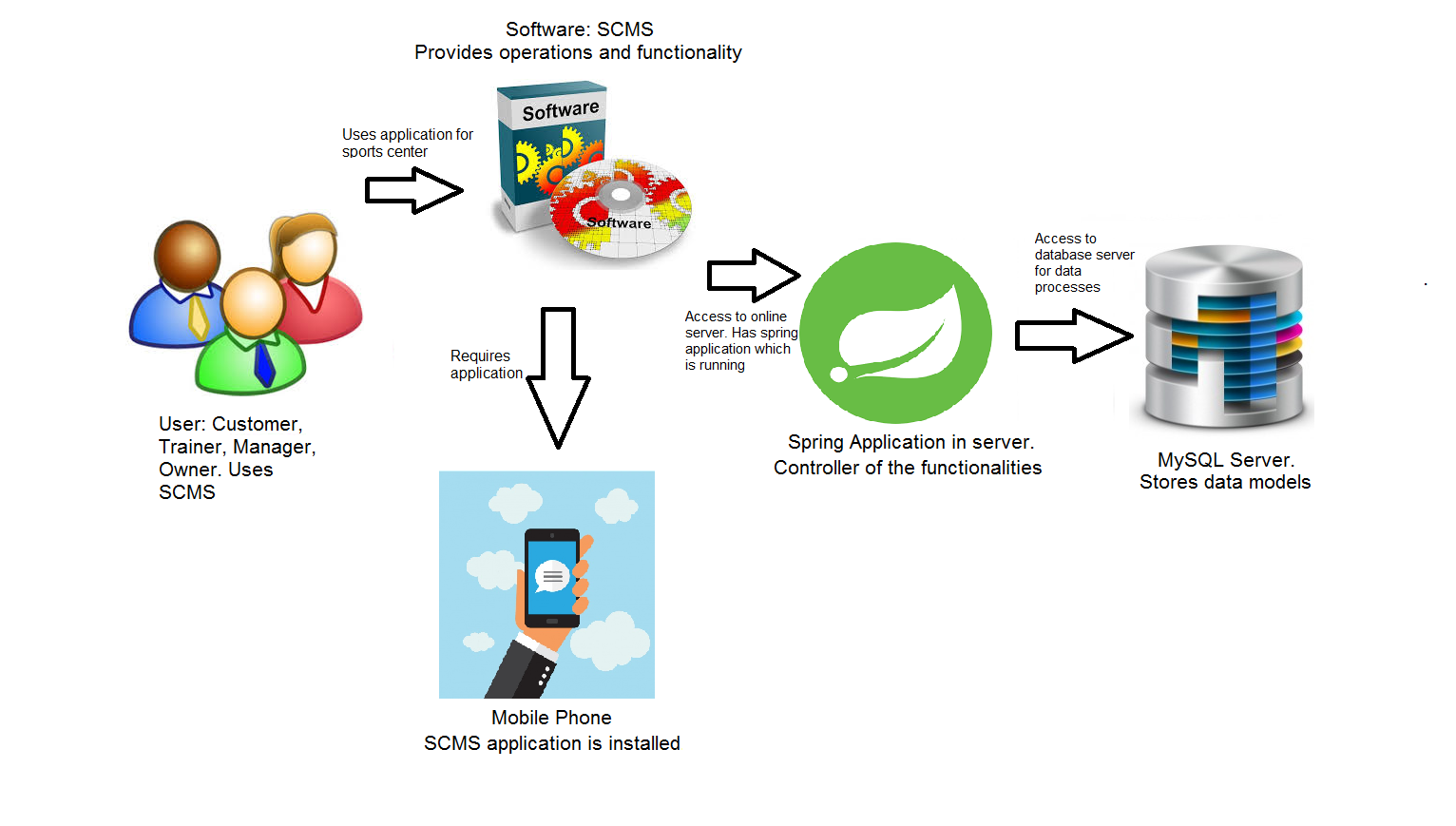
This document’s purpose is the explain details of software design. General views and behaviors of the system explicitly explained. Interactions between interfaces and other components of the system will be explained. Also, design constraints will be explained.

*2.2 Document Overview*

In design constraints part of this document, hardware and development constraints will be explained. General descriptions and the impacts of the all limitations will be described.

In design details part of this document, architecture of the software will be explicitly described. Entity-Relations, interfaces, views, controllers and models of the system, interactions between them and other components of the system will be specifically revealed.

*2.3 System Overview*



*2.4 Definitions Acronyms, and Abbreviations*

|  |  |
| --- | --- |
| *Term/Acronym* | *Definition* |
| SRS | System Requirements Specifications |
| SDD | Software Design Description |
| SQL | Structured Query Language |
| JVM | Java Virtual Machine |
| SCMS | Sports Center Management System |

1. **Design Constraints and Decisions**

* The system should be developed in accordance with Object Oriented Design. OO design is important for future development and it is more useful for teams.
* The system’s official language is Java. In mobile application, we should use Java for Android. Java has great support in server side and it required for Android mobile application development.
* Model-View- Controller is the system’s architectural pattern. In this way, we can separate critical system parts easily. It decreases cost of maintenance.
* The system’s database management system is MySQL. Because it is open source and we can easily learn how to use it.
* In mobile side, the application supports 4.2 or newer versions of Android. It provides wide support for maximum users.
* The Server is available for every time. So, we need to use cloud servers. In this case, we rent a server from Digital Ocean.
* In front end development, we use bootstrap 4 for better and modern view.
* The development environments; Android Studio for Mobile application, and Sts tool for back-end development. It is important for team works. Because it decreases inconsistency.
* Security of user logins will be provided by AES-256 (Advanced Encryption System).

1. **Design Details**

*4.1 Software Components*

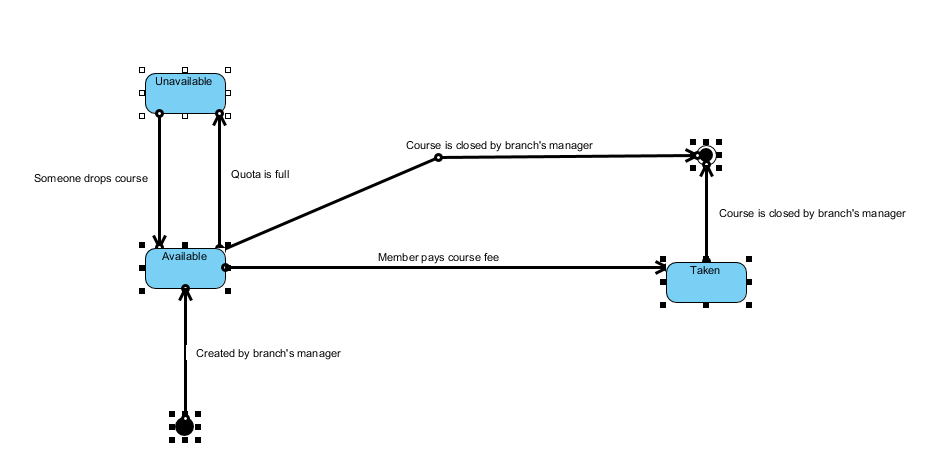
Please check SSD – Appendix A for to see class diagram.

Note about class diagram: We have built a REST service, via Spring Boot, to reach our remote database, since it is a more secure and elegant way. All data transfers will be done through this REST service and related classes are associated with it in Class Diagram.

*4.2 Software Behavior*

Please check SSD – Appendix B for to see sequence diagrams.

State Diagram of “Course” Class:

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*4.3 Data Model (E-R Diagram)*

Please check SSD – Appendix C for to see E-R diagram.

*4.4 User Interface Design*

For more detailed visual of the interfaces, you can check Appendix – E to see. And all dialog screen messages please check Dialog Screen Design subject.

In the design, we encountered firstly “WelcomeScreen” it includes two buttons, one of the them is for sign up other is for sign in. If user clicks sign up button, system redirects us to “SignUpScreen”. In the sign-up screen, a form is showed to user. User must enter information to all necessary fields for sign up. If user not completes the form, system do not move on other pages and gives an error. If username already taken, again system do not move on and shows a message for issue. Otherwise user enters all necessary information and system successfully register the user, system shows a successful operation message to user and redirects the use to “FragmentMyProfile”.

In “WelcomeScreen”, another button is for sign in. If user clicks this button, system redirects us to SignInScreen. In the screen, four check-boxes and two fields are shows up. User must select type for himself/herself and enter necessary information to fields. Otherwise system shows a message for incomplete fields and do not move on other pages.

If user successfully login or successfully registered and user type is member, system redirects the user to “FragmentMyProfile”. In this menu three buttons show up. One of them is for member’s schedule, another of them is for joined courses and last is for upgrading membership or become full member of the sports center. And side menu for navigation it called “CustomerNavigationMenu”.

If user clicks “My Schedule” button in the “FragmentMyProfile”, system redirects to user “MyScheduleScreen”. This interface shows activity plan of user. This activity plans can change via trainer.

If user clicks “My Courses” button, system redirects user to “MyCoursesScreen”. This screen shows list of joined courses of a user.

If user clicks “” button, system redirects user to “MembershipOptionsScreen”. User chooses one of them and selects branch that he/she wants to register. Branch selection is default if user not changed it. Then user clicks “Go to Payment” button. Then system redirects user to “PaymentScreen”. In the view, four fields, one checkbox and one button come up. User must fill all the fields and he/she may click 3D payment checkbox, then clicks pay button. If an error occurs during filling or payment system shows a message for issue.

In “CustomerNavigationMenu”, “My profile”, “Courses”, “Special Offers” buttons come up. If user clicks “My Profile”, system redirect user to “FragmentMyProfile”. If user clicks “Courses” button, system redirects user to “FragmentAllCourses”. In this view, all opened courses are listed. User may select one of them. If user select one of the courses, system redirects user to “FragmentCourse”. In this view course information is showed and one “Enroll” button comes up. If user clicks “Enroll” button, system redirects user to “PaymentScreen”. Again, user must fill necessary fields and if no error occurred during payment user successfully enrolled to course and system shows a successful message. If user clicks “Special Offers” button, system redirects user to “FragmentSpecialOffer”. In this view special offers are listed, user may select one of them and clicks “Apply” button. If user pass requirement conditions of special offer, successfully applied, otherwise system shows a message for issue.

In “FragmentMyProfile” on top “SettingsMenu” is available. This little menu shows three buttons. “Update Profile”, “Cancel Membership” and “Logout” buttons come up. If user clicks “Update Profile” button, system redirects user to “UpdateProfileScreen”. In this view user’s information shows to user and user may change any information then in confirm part, user must enter her/his username and password then confirm changes through “Update” button. If no error occurred during change process, system shows a successfully updated message.

If user clicks “Cancel Membership” button, system redirects user to “CancelMemberShip” screen. In this view user must enter his/her username and password for cancellation of his/her full membership of the sports center, then clicks “Cancel My Membership” button. If no error occurred during cancellation process, system shows a successfully cancelled message, otherwise system shows an error message.

If user clicks “Logout” button, system shows “Are You Sure?” screen, then if user clicks “Yes”, use successfully exited from system.

In “SignInScreen” if user selects a user type except “Member”, system redirects user to “FragmentManagementPanel”. Again, system controls username and password likewise “Member” type, login processes are the same except redirection of the system. In the “FragmentManagementPanel” seven buttons are available with respect to user type.

If user type is “Manager”, “User Management”, “Trainer Management”, “Courses Management” and “Special Offers Management” is available. If manager clicks “User Management” button, system redirects manager to “UserManagementScreen”. In this view member list showed to manager. “Add”, “Ban”, “Update” button comes up. Ban and update buttons created for all members, add button just one. If manager clicks “Add” button, system opens a form for member information same as sign up operations. All success and error dialogs are the same as sign up operations. Then manager clicks “Add” button. System shows “Are You Sure?” screen. If manager applies the process, user added and system shows successfully added message. If manager clicks “Update” button, system opens a form that includes user information, manager may change information then clicks “Update” button. System shows “Are You Sure?” screen. If manager applies the process, user profile updated. If manager clicks “Ban” button, system shows “Are You Sure?” screen. If manager applies the process, member banned from sports center.

If manager clicks “Trainer Management” button in the “FragmentManagementPanel”, system redirects manager to “TrainerManagementScreen”, In this view member list showed to manager. “Add”, “Delete”, “Update” button comes up. Delete and update buttons created for all trainers, add button just one. If manager clicks “Add” button, system opens a form for trainer information same as sign up operations. All success and error dialogs are the same as sign up operations. Then manager clicks “Add” button, system shows “Are You Sure?” screen. If manager applies the process, trainer added, system shows successfully added message. If manager clicks “Update” button, system opens a form that includes user information, manager may change information then clicks “Update” button. System shows “Are You Sure?” screen. If manager applies the process, trainer profile is updated, system shows successfully updated message. If manager clicks “Delete” button, system shows “Are You Sure?” screen. If manager applies the process, trainer deleted in the system added, system shows successfully deleted message.

If manager clicks “Courses Management” button in the “FragmentManagementPanel”, system redirects manager to “CourseManagementScreen”. In this view courses are listed and “Add” and “Delete” buttons come up. Delete buttons created for every course, add button just one. If manager clicks “Delete” Button, system shows “Are You Sure?” screen. If manager applies the process, course is deleted and system shows successfully deleted message. Otherwise system shows a message for issue. If manager clicks “Add” button, system opens a form for course information, manager must fill all necessary fields then click “Add” button, system shows “Are You Sure?” screen. If manager applies the process, new course added to system and system shows successfully added message. Otherwise system shows a message for issue.

If manager clicks “Special Offers Management” button in the “FragmentManagementPanel”, system redirects manager to “OfferManagementScreen”. In this view a form comes up for creating new special offer. All fields are necessary and manager must fill them, otherwise system shows an error message for missing fields. If manager fills all areas then clicks “Create New Special Offer” button, system shows “Are You Sure?” screen. If manager applies the process, new course special offer added to system and system shows successfully added message. Otherwise system shows a message for issue.

If user type is “Trainer” and successfully logged in. “Trainee Management” button will be available for trainer. If trainer clicks “Trainee Management” button, system redirects trainer to “TraineeManagementScreen”. In this view, trainee list showed to trainer with two buttons. One of them is “Update Schedule” other is “About trainee”. If trainer clicks “Update Schedule” button, system opens a form for activities, trainer change activity plans. Then clicks “Update” button, system shows “Are You Sure?” screen. If trainer applies the process, schedule is updated and system shows successfully updated message. Otherwise system shows a message for issue. If trainer clicks “About Trainee” button, system opens trainee’s plan and show it to trainer.

If user type is “Owner” and successfully logged in. “Manager Management” and “Branch Management” will be active. If owner clicks “Manager Management” button, system redirects owner to “ManagerManagementScreen”. In this view manager lists showed to owner with “Add”, “Delete” and “Update” buttons. Delete and update buttons created for all managers, add button just one. If owner clicks “Add” button, system opens a form for manager information same as sign up operations. All success and error dialogs are the same as sign up operations. Then owner clicks “Add” button, system shows “Are You Sure?” screen. If owner applies the process, manager is added, system shows successfully added message. Otherwise system shows a message for issue. If owner clicks “Update” button, system opens a form that includes manager information, owner may change information then clicks “Update” button, system shows “Are You Sure?” screen. If owner applies the process, manager profile updated, system shows successfully updated message. Otherwise system shows a message for issue. If owner clicks “Delete” button, system shows “Are You Sure?” screen. If owner applies the process, manager deleted in the system added, system shows successfully deleted message. Otherwise system shows a message for issue.

If owner clicks “Branch Management” button, system redirects owner to “BranchManagementScreen”. In this view branch list showed to owner with “Show All Stats”, “Show Stats” and “Add” button. If owner clicks “Show All Stats” button, system opens shows all branch stats to owner. If owner clicks “Show Stats”, system opens specific branch’s stats. If owner clicks “Add” button, system opens a form for branch information, all areas are necessary and owner must filled them. If all fields is filled and owner clicks “Add” button, system shows “Are You Sure?” screen. If owner applies the process, new branch added to system. Otherwise system shows a message for issue.

*4.5 Dialog Screen Design*

Please Check SSD – Appendix F for to see dialog screens.

1. **Requirements Traceability**

Please check SSD – Appendix D for to see traceability matrix.

1. **Appendices**

* SDD – Appendix A – Class Diagram
* SDD – Appendix B – Sequence Diagrams
* SDD – Appendix C – E-R Diagram
* SDD – Appendix D – Traceability Matrix
* SSD – Appendix E – Interfaces
* SSD – Appendix F – Dialog Screens