# Self-Assessment and Personalized Learning (SAPL) System

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## Contents

# Overview

Digi-Safari (DS) provides software training and services to corporate clients looking to re-skill/ Up-skill existing/ new hires under B2B (Business-Business) model. DS wants to extend the service for the B2C (Business-Consumer) segment, where individual learners can also directly register for self-paced training. To better assist learners in assessing their current skill level and pick the best-fit learning path, DS is planning to develop a Self-Assessment and Personalized Learning-path (SAPL) System. SAPL will provide on-line self-assessment tool through series of questions, which will auto-select next question based on response from previous questions equivalent to GRE type test. Based on the performance and candidate's career goal, SAPL will automatically come up with Personalized Learning-path. Candidate will then have option of enrolling through Digi-Safari training programs.

# Project Team

| Roles | Name | Major responsibilities | Contact (Email and/or Phone) |
|---|---|---|---|
| Project owner | Dipti Dash, Digi-Safari LLC | Guiding team development efforts towards successful product delivery. | deep@digi-safari.com |
| Team leader | Md Saiful Islam | Enabling team co-ordination / communication, assigning tasks to individual team members | mislam16@students.kennesaw.edu |
| Team members | A B M Kamrul Islam Riad | To up-skill on full stack Java and design and developing the assigned front-end, back-end services of the project | aislamri@students.kennesaw.edu |
| | Prathyusha Kommineni | To up-skill on full stack Java and design and developing the assigned front-end, back-end services of the project | pkommine@students.kennesaw.edu |
| | Alfeshkhi Hassan | To up-skill on full stack Java and design and developing the assigned front-end, back-end services of the project | halfreshk@students.kennesaw.edu |
| Advisor / Instructor | Madhu Samala, Dongli Wu Digi-Safari LLC | Coaching and mentoring the team to up-skill on Full Stack Java. Guiding through project planning, designing, development and deploying the application to cloud | madhu.samala@digi-safari.com dongli.wu@digi-safari.com |

# Project website

- http://lms.digi-safari.com/

# Final Deliverables

1. Design and build the project back-end, including the assessment algorithm.
2. Design and build the project front-end (UI/UX), making it a mobile friendly web application
3. Deploy the beta version of SAPL to Cloud

# Milestones

## Weekly Milestones

#1 - By 9/12/2020

**Learning Gaps: Learning & Hands-on Front-end development using HTML5, CSS3, Bootstrap, JavaScript**

We are expected to learn and get hands-on developing a front-end application by working on the given assignments which cover HTML5, CSS3, JavaScript technologies. We will mostly use this time to cover our learning gaps on deferent technologies.

#2 - By 9/18/2020

**Learning Gaps: Angular part 1**

We are expected to learn and get hands-on developing using Angular. Introduction to TypeScript, Angular , Hello World Application, Angular Architecture, Modules, Components, Template Data Binding, Event Handling, Angular Material

#3 - By 9/25/2020

**Learning Gaps: Angular part 2**

We are expected to learn and get hands-on developing using Angular. Angular Forms, Template Driven, Reactive Forms, Routing, Gaurds, JWT Security. Working With Services, Working with HTTP API calls, GET, POST,PUT,DELETE,PATCH

#4 - By 10/02/2020

**Learning Gaps: Java**

We are expected to learn and get hands-on developing using Java.
- Java Fundamentals, Working with Primitives, Control Statements.
- Working with classes & Objects, constructors, static members, methods.
- Object Oriented Programming Features, Exception Handling

#5 - By 10/09/2020

**Design thinking & architecture of the capstone project**

We are expected to understand the functional requirements of the application and design the data models, front-end UI wireframes and back-end web services.

#6 - By 10/16/2020

**Learning & Hands-on Back-end development using Spring, Spring Boot**

We are expected to learn and get hands-on developing back-end APIS (RESTful Webservices) by working on the capstone project which cover Spring, Spring Boot.

#7 - By 10/23/2020

**Working on Capstone Project Backend Service 1 and 2**

We are expected to develop backend services
- RESTful Web services, Hibernate Mappings

#8 - By 10/30/2020

**Working on authentication service and Backend Service 4**

We are expected to develop Authentication service and build backend service 4
- Spring Security, Implementing Authentication & Authorization using JWT tokens
- Securing routes in Angular using Routing Guards.
- Introduction to Polyglot persistence, Working with NoSQL Databases, Spring Boot- MongoDB

#9 - By 11/06/2020

**Writing test cases for implemented services, develop Eureka and Zuul service**

We are expected to test cases for all implemented services.

- Testing RESTful Web Services, Introduction to CI, Implementing Gitlab CI pipelines for RESTful Webservices.
- Introduction to Microservices, Monolith vs Microservice, Netflix Cloud, Spring Cloud, Eureka Service Registry & Discovery,
- Config Server, Zuul API Gateway

#10 - By 11/13/2020

**Implement communication between services and containerization implemented services and whole application.**

We are expected to containerize whole application
- Message Broker, RabbitMQ, Communication between services
- Docker, Docker images, containers, containerizing backend services
- Containerizing Front End applications, docker-compose

#11 - By 11/20/2020

**Developing UI using Angular part 1**

We are expected to develop the front-end UI using Angular framework with the following objectives
- Developing services to consume backend Quiz Service end points
- Developing services to consume backend Question Bank Service End points
- Developing the Front-end UI screen to replicate the functionality of quiz and quiz play services

#12 - By 11/27/2020

**Developing UI using Angular part 2**

We are expected to develop the front-end UI using Angular framework with the following objectives
- Developing services to consume backend Quiz Service end points
- Developing services to consume backend Question Bank Service End points
- Developing the Front-end UI screen to replicate the functionality of quiz and quiz play services

#13 - By 12/04/2020

**Code review, Refactor, Integration & Deployment**

We are expected to integrate the front-end with backend services
1. Implement unit testing and e2e testing for the whole application and automating through Gitlab CI pipelines
2. Containerize the application using Docker
3. Finally, package and deploy the application to Kubernetes

## Future milestone meetings date/time

We have a repetitive weekly meeting (3 times in a week). So, the followings are our next 10 meeting schedules. Each week we set milestones for the next week tasks and deliverables.

**Milestone #2 report meeting held on October 4, 2020 at 12pm. Meeting was lasted for about one hour.**

## Communication and Meeting Planning

We have weekly 3 (Three) times meeting with the team. Our senior instructor also presents at every meeting. Our meeting time Monday, Wednesday, and Friday at 12:00 pm. Meeting usually last for 1 hour in order to distribute tasks, review timeline, and reset focus. We use the GoToWebinar platform as our conference call. Also, a project management tool named Trello is being used to track our progress.

## Project Schedule and Tasks Planning (Gantt Chart)

| Deliverable | Tasks | Complete% | Assigned To | 09/05 | 09/12 | 09/18 | 09/25 | 10/02 | 10/09 | 10/16 | 10/23 | 10/30 | 11/06 | 11/13 | 11/20 | 11/27 | 12/04 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Learning Gap & Hands-on Front end and Back end Development** | Learning Gaps: Learning & Hands-on Front-end development using HTML5, CSS3, Bootstrap, JavaScript | 100% | Saiful, Kamrul, Prathyusha, Hassan | 20 | 20 | 20 | | | | | | | | | | | |
| | Learning Gaps: Angular part 1 and 2 | 100% | Saiful, Kamrul, Prathyusha, Hassan | | 10 | 15 | 15 | | | | | | | | | | |
| | Learning Gaps: Java | 100% | Saiful, Kamrul, Prathyusha, Hassan | | | | 15 | 15 | | | | | | | | | |
| **Design thinking & architecture of the capstone project** | Design thinking & architecture of the capstone project | 10% | Saiful, Kamrul, Prathyusha, Hassan | | | | | 4 | | | | | | | | | |
| | Learning & Hands-on Back-end development using Spring, Spring Boot | 10% | Saiful, Kamrul, Prathyusha, Hassan | | | | | 10 | 4 | | | | | | | | |
| | Working on Capstone Project Backend Service 1 and 2 | 0% | Saiful, Kamrul, Prathyusha, Hassan | | | | | 5 | 10 | 10 | | | | | | | |

| Category | Task | Progress | Assignee | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Working on authentication service and Backend Service 4 | 0% | Saiful, Kamrul, Prathyusha, Hassan | | | | | | | 10 | 10 | | | | | | |
| Writing test cases for implemented services, develop Eureka and Zuul service | Working on test cases for implemented services, develop Eureka and Zuul service | 0% | Saiful, Kamrul, Prathyusha, Hassan | | | | | | 6 | 6 | 10 | 5 | 5 | | | | |
| | Implement communication between services and containerization implemented services and whole application. | 0% | Saiful, Kamrul, Prathyusha, Hassan | | | | | | | | | 10 | 10 | | | | |
| | Developing UI using Angular part 1 | 0% | Saiful, Kamrul, Prathyusha, Hassan | | | | | | | | | 5 | 10 | 5 | | | |
| | Developing UI using Angular part 2 | 0% | Saiful, Kamrul, Prathyusha, Hassan | | | | | | | | | | 8 | 5 | 10 | | |
| Code review, Refactor, Integration & Deployment | Integration and Deployment | 0% | Saiful, Kamrul, Prathyusha, Hassan | | | | | | | | | | | 8 | 10 | 20 | 20 |
| | Presentation Preparation and Formal presentation | 0% | Saiful, Kamrul, Prathyusha, Hassan | | | | | | | | | | | | | 10 | 10 |
| | Finalize report and submission | 0% | Saiful | | | | | | | | | | | | | | 20 |
| | Total workload | 386 | | 20 | 30 | 35 | 30 | 34 | 20 | 26 | 20 | 20 | 33 | 18 | 20 | 30 | 50 |