Faculty of Computing, Engineering and Science

Assessment Cover Sheet and Feedback Form 2021-22

Module Code:	Module Title:	Module Team:
CS4S761	Distributed Computing	Shiny Verghese / Samith Shetty/Peter Parody
Assessment Title and Tasks: Micro-services based web system using Docker		Assessment No. 1
Date Set: **25-Nov-23**	Submission Date: **12-Jan-24 23:59**	Return Date: **09-Feb-24**

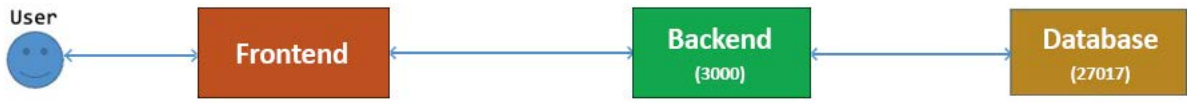
IT IS YOUR RESPONSIBILITY TO KEEP RECORDS OF ALL WORK SUBMITTED

Marking and Assessment
This assignment will be marked out of 100% This assignment contributes to 50% of the total module marks.
Learning Outcomes to be assessed (as specified in the validated module descriptor https://icis.southwales.ac.uk/): 1) To design and develop distributed systems from the analysis of commercial requirements. 2) To make valued judgements concerning the utilisation of distributed systems in the world of commerce
Provisional mark only: subject to change and / or confirmation by the Assessment Board

Assessment Task

Coursework Overview:

You have been tasked to implement a portfolio web-based system using Docker containers. The system is meant to display a list of skills and projects on frontend and also to provide a backend to add or remove skills and projects. The system layout can be seen in the diagram below:



The system components:

Each of the components shown in above diagram should be instances of docker containers. The whole system should be able to be started from a **docker-compose.yml** file with a **docker- compose up** command. Most of the individual containers should be built using the **Dockerfile** and **docker-compose.yml** file where applicable.

Frontend:

The frontend is a website that will host the portfolio. It has the purpose to present skills and projects in an easy to read and professional manner (Skill name, Skill Description, Project Name, Project Tech Stack, Project Description) using REST APIs create on backend. This frontend will be based on a **JavaScript framework** or plain **HTML, CSS and JavaScript**. This frontend should contain multiple routes(Home, Skills, Projects).

Backend:

The backend server is based on **Node.js**. This should be used to create REST APIs that when hit can query the Database. Backend should also have its own views using **ejs** These REST APIs should be used to retrieve data from database, add data to database and router to views in the backend. The backend should have views that show a list of skills, a list of projects and have views to add a new skill and to add a new project. These views should also allow to manage the skills and project (Edit & Delete). Data entered in the database should be validated. The backend should be running on port 3000.

Database:

The database should be based on the **MongoDB** image from docker container registry and store the following data:

- Skill name
- Skill description
- Project name
- Project Tech Stack
- Project description

The database should be running on port 27017.

Deliverables:

- A zipped (.zip) folder structure that includes all the necessary files to run a *docker-compose up* command from the root directory to start the fully functional system.
- A 5-10 minute code demo discussing your implementation, the results obtained and the problems you faced in implementing the assignment (the above sections will also be marked according to how well you demonstrate your understanding of them in the code demo).