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**CSC 648/848 Software Engineering**

# Milestone 0

## 1.Introduction

The high-level purpose of this milestone is for student teams to choose, install and prepare IT infrastructure for the development of team final project in CSC 648-848. Specifically, in M0 must achieve the following objectives working together:

* Configuring GitHub to enable team SW development
* Choosing a SW stack
* Getting your choices from above approved by TA
  + Note that your team will be choosing most of the IT infrastructure for developing the team project and the team choices will have to be approved by TA.
  + FYI, in the last semesters, here are the choices of most students
    - MERN stack (MongoDB, Express, React, Node), (most choices)
    - MongoDB, Next.JS, Express, React, Node
    - Regardless consider Vercel for your front-end deployment
* Creating a joint WWW page with info about team members using above infrastructure
  + this page will also serve as ABOUT page for your team application
  + Please specify team member info with his/her role in the team.
  + Please specify the team meeting schedule there (2 meetings per week),
  + Please specify your team communication channel (like slack/discord).
  + I also recommend sharing your study schedule for the technologies you need to study such as Express/React.

The deployment server and ***all*** team applications for final team project must be running on a remote host. ***Localhost hosting will not be accepted****.*

**Your responsibility:**

**Since CSC 648-848 is a capstone senior course students are expected to learn necessary tools themselves and in working with their team members**. Use of on-line resources and asking around is encouraged. Class instructors will only help in case there are problems students cannot resolve themselves with reasonable efforts, and only at high level - **coding details will be the duty of students to figure out.**

Each team member must complete his/her M0 tasks but, to accomplish this, each team member must also work with the rest of the team. This means that you can help each other, ask for help, work in pairs and are in fact encouraged to do this to not only help with M0 but also build the teamwork.

Your first task is to read through the entire document. Then, follow the steps starting with Section 2 “Setting up GitHub”.

In section 3 we then describe actual M0 task where you are first to select deployment server and SW stack, then install them, and finally create a joint team web page. This WWW page can be used in your final project too (e.g. ABOUT page on your final team project WWW site). Section 4 describes M0 grading.

Late programs will be downgraded 5% per day, based on the time the submission is made.

## 2. Setting up GitHub for team SW development

### 2.1 GitHub Team (Private) Repo

The purpose of this part of the exercise is for your team to set up the team private GitHub repository that is going to be used for storing your team’s project (SW, documentation, formal milestone deliverables etc.) and be accessible only to the team members. Only one member needs to set up the private repository.

**As a first step, all team members need to have their own GitHub account. This is mandatory, NO EXCEPTIONS - see step 1 below (you need to have your own GitHub these days anyway).**

##### **Creating GitHub Account (if you do not have one).**

1. If needed, create your own GitHub account. If you already have an account, you can skip this step.
   1. When creating the GitHub account, select that you will have public repos. DO NOT SELECT private repos, or you will be asked to enter credit card information.

##### **Creating GitHub Team private repo.**

1. **Select one team member (e.g. github master) to create the private repo.**
2. **Selected the team member from step 1 uses the following link to create the repo:**

* Section 01 : [https://classroom.github.com/a/FPNHQkHS](https://nam10.safelinks.protection.outlook.com/?url=https%3A%2F%2Fclassroom.github.com%2Fa%2FFPNHQkHS&data=05%7C02%7Chjsong%40sfsu.edu%7C87529430a3274c6b87ad08dcc929e1dc%7Cd8fbe335822c41a987747f16709aac9f%7C0%7C0%7C638606428934469587%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C0%7C%7C%7C&sdata=Db59heu92UWFTr19yJ3pe8qMcAnVyQ%2BEj88uXYN7nb8%3D&reserved=0)
* Section 04 :  [https://classroom.github.com/a/nDFVuEO2](https://nam10.safelinks.protection.outlook.com/?url=https%3A%2F%2Fclassroom.github.com%2Fa%2FnDFVuEO2&data=05%7C02%7Chjsong%40sfsu.edu%7C87529430a3274c6b87ad08dcc929e1dc%7Cd8fbe335822c41a987747f16709aac9f%7C0%7C0%7C638606428934480214%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C0%7C%7C%7C&sdata=GPl5shZN1szy6Okbytx1mGbwJSIcHPeT0JgeRxUjJkY%3D&reserved=0)

Team name should be a format of **csc648-[NN]--team[MM]** where NN is a section name and MM is a team name. The example includes csc648-01-Fall24-team02.

1. A chosen team member will then ADD ALL MEMBERS of the team to the private repo. Each invited team member has to accept the invite. (**For each non-invited team member, 10 point will be deducted from M0 Grade for the whole team to promote teamwork.)** 
   1. Simply inviting the team member is not enough. They need to accept the invite. Non-confirmed invites will get the same penalty as no invite for those who do not follow up.

Team members are strongly **encouraged to** practice creation of branches and code merge, which turned out to be occurring problems with previous teams. In the process, github master should be able to lead the learning activities for **GitHub.**

**The team repository created with the above link will be used to store your team’s source code and milestone documents. This repo is already private and configured for you to begin work right away. There is *NO* need for a paid subscription for the private repo. This have been taken care of for you.**

## 3. M0 tasks

## This section describes how to develop actual M0 tasks, after you have completed all the previous steps.

## Task 1: Selecting Server/Platform Provider, Software stack and Deploying Your Team Web Application

The purpose of this task is for you as a team to do the following:

* Select *a Software Stack*.
* Cloud : we recommend one of the followings
  1. [Amazon AWS](https://aws.amazon.com/free/)
  2. [Google Compute Engine](https://cloud.google.com/free/)
  3. MS Azure
* The server-side language for your web application must be one of the following:
  1. Python
  2. JavaScript
* For databases we allow either SQL or NoSQL databases. For ex,
  + - SQL: MySQL, supabase
    - NoSQL : MongoDB, MongoDB Atlas
* For Web Application Framework, we recommend using one of the followings :
  + - Express (JS)
    - Django (Python)
    - Next.js. (JS, React based)
      * **Note:** If you choose to use Next.js, you must be familiar with React, as Next.js is built on top of React.
      * **Note :** if you need a complicated backend logic, you may still need to use a dedicated backend framework like Express or Django alongside Next.js.
  + **Front end technology**
    - we recommend using one of the following technologies using
      * React
      * Angular
* Web server
  + - Vercel is recommended.

**When using AWS or Google Compute Engine please refrain from using their app features. These auto-deployment tools cause some issues for students and in some cases caused students to be charged (Most of it not all were refunded). If you do use them, use at your own risk we are not responsible for accrued costs for running the server.**

**When deciding on the technology** to be used in your Software Stack, besides functionality (a common factor to start from), you should keep a few additional factors in mind when comparing technologies side by side. Some key factors may be:

* How much is the technology used by others?
* What features are offered compared to other technologies.
* **And very important: How easy is it to use/learn for all your team members given specific class schedules?**
* Please avoid choosing the technologies where there is no expertise in the team. Remember: your focus is to deliver the application and NOT necessarily learn/use newest technologies

**Note: your choices must be made such as not to incur any costs, which is possible today given many free offerings on the market.**

## Task 2: Getting Server/Platform and Software Stack from Task 1 Approved:

The task of selection has to be done very soon after formal start of M0.

When your team has decided on a software stack, **team lead** needs to email the class TA and instructor detailing your software stack. The email **must** have the following format:

* Receivers: Class TA and instructor
* Subject: CSC 648 848 Section X Team M
  + **(M is team number between 01 and 06)**
* List the Technologies used in your software stack.
* This includes the following:
  + Cloud server (e.g., Amazon AWS or Google cloud)
  + Operating System and Version Number
  + Database and Version Number
  + Web application framework (e.g., Express)
  + Front-end technology (e.g., React)
  + Web Server (e.g., Vercel)
  + Also list any technologies or packages you will need that you think is important. (you can exclude things like git and ssh). There is no wrong answer here, just list what you can. The more the better, it’ll help me determine how sound your software stack is.
* Then list each member’s familiarity for each technology. Based on familiarity, share the study plan for each technology.
  + For example of Back-end server (e.g. Express), your back-end lead along with another team mate XXX will study a simple web server by when…

If the class TA has any questions about your software stack, make sure that your team replies promptly. Delayed responses can delay Software Stack approval.

***Class TA will send formal checkpoint request to solicit your e-mail on completion of Task 2 in order to ensure this task is completed on time.***

***Once your software stack has been approved via e-mail from TA you must begin installing and configuring your server and completion of M0 immediately.***

## Task 3: Installing and Configuring Approved Software Stack.

After your server/platform provider and software stack have been approved by e-mail from TA it is now time to begin installing everything.

There will be no detailed instructions given for this as there are too many possible configurations. But you may follow these simple steps:

1. Start server Instance with your server host (e.g. Google cloud)
2. SSH/log into your server
3. Install DB (e.g. sql or mongo db version XX, or mongodb Atlas or supabase )
   * 1. Create a “User” DB template.
4. Install Server-Side language (e.g. python XX)
5. Install remaining needed packages
6. Make any needed configurations.

This may not be the most detailed set of instructions be it gives you an order of items to work through. **Please use on-line resources and follow the documentation!** If you run into any issues there is help available. You may ask anyone in your team and your class.

Once you finalize the detailed instruction to setup your team environment, please modify README.md file.

## Task 4: Create a Team Website and ABOUT page

The purpose of this part of the exercise is to get you to work individually to create **your own webpage within your team’s framework context**, and then to work with your team to join these pages together using your teams GitHub account and chosen framework into a single site. We recommend that you in fact create ABOUT WWW page which introduces the team members. This can then be part of your final application and is great for your portfolio.

Everyone in your team should clone the team’s private GitHub repository into his/her individual shell account or onto your local computer, and within the chosen team framework create their own WWW page that at a minimum displays their name and the role and their or some other image (if you are comfortable it is good idea to use your own photo which is useful for your ABOUT page and portfolio. **Photo is optional**). Please make sure that you have the right to use any posted photo. This work must be completed by individual student and then pushed to the team’s private GitHub repository individually. The file(s) created/added should then be merged into the team’s private GitHub repository. **The website must be deployed onto the team’s remote server setup as in Task 3. ABOUT page and student individual pages must also be deployed on the server.**

**Make sure your individual test environment is identical to the one on the server.**

One of your teammates will need to modify your framework’s home page to point to all the different team member pages (all residing at the server). The finished site must look something reasonably close to the example in Figure 1.



Figure 1. The Sample ABOUT page

This single ABOUT page and individual team member pages) site must **be served from the remote server you setup in Task 3.** This is the same way you will deploy your final app, hence this is useful to make sure you learn and test it, especially how to deal with branching and merging code. Every team must understand how your team’s application is deployed and managed.

## 4. Submission and Grading of M0

### 4.1 Submission of M0 for grading

All projects will be inspected and graded on the deadline. The key for grading will be your team’s correct installation and configuration of software stack, correct setup and usage of GitHub, and the deployment of your About Me Web Application from ***YOUR CHOICE OF REMOTE SERVER (*section 2).** Emphasis for M0 grading is on correctness (not so much on UI design of the final team page) and proper usage of development tools and deployment method.

Once you are done and ready for grading you must create a M0 report and put the report on M0 folder.

M0 report:

Cut and paste the form below and put it as MS Word file named as

**“CSC 648-848 M0 section N Team M.DOC”.** The below form is used for having needed information for the current milestone. The below table is used to help access certain parts of your web application. Please make sure the information described is accurate and up to date to ensure grading of the milestone is completed in an efficient manner.

## San Francisco State University

## CSC 648 - 848

## Milestone 0 Submission Form

**Section M Team N**

Below is a list of the technologies used in Team's software stack: *(The following is the example.)*

Sever Host: Google Compute Engine 1vCPU 2 GB RAM

Operating System: Ubuntu 16.04 Server

Database: Mongo DB Atlas

Web Server: Vercel

Front-end Framework : React

Server-Side Language: Javascript

Web Application Framework : Express

Additional Technologies:

IDE: Visual Studio

|  |  |
| --- | --- |
| Item | Credentials |
| Website URL |  |
| Cloud VM instance | Please share how TA/instructor can connect to your VM instance.  If you invite / give access to TA/instructor, use their email ([shubhpachchigar@gmail.com/hjsonghjsong@gmail.com](mailto:shubhpachchigar@gmail.com/hjsonghjsong@gmail.com)).  If you need any other way, then instruct us. |
| Database URL | Please share how TA/instructor can connect to your database.  If you invite / give access to TA/instructor, use their email ([shubhpachchigar@gmail.com/hjsonghjsong@gmail.com](mailto:shubhpachchigar@gmail.com/hjsonghjsong@gmail.com))  If you need any other way, then instruct us. |

|  |
| --- |
| Addition information including your study plan for each technology |
| For each technology X,Y,Z, please describe Member's Familiarity with X,Y,Z on a scale of 1 to 5, with 5 being very familiar and 1 being never used it.         |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | Google cloud vm | JS | React | … | | Jane | 5 | 2 | 1 |  | | Jack | 1 | 3 | 5 |  | | … |  |  |  |  |   Based on our familiarity, we setup the following study plan.   * React   + Who :   Jane (leader)  Tom   * + Expected goal by next 4 weeks:   Complete simple search inventory page |

### 4.2 Grading of M0

The grade for this assignment will be determined according to the following criteria:

|  |  |
| --- | --- |
| **Category** | **Point** |
|  |  |
| Given Class TA&instructor Database access | 25% |
| Correct use of Git and GitHub  Correctly Filled out M0 Submission Document. | 25%  25% |
| Correct team WWW page functionality, deployment and proper usage of team’s Software Stack for creating web page | 25% |
| **Total:** | 100% |