STEMLoyola Challenges

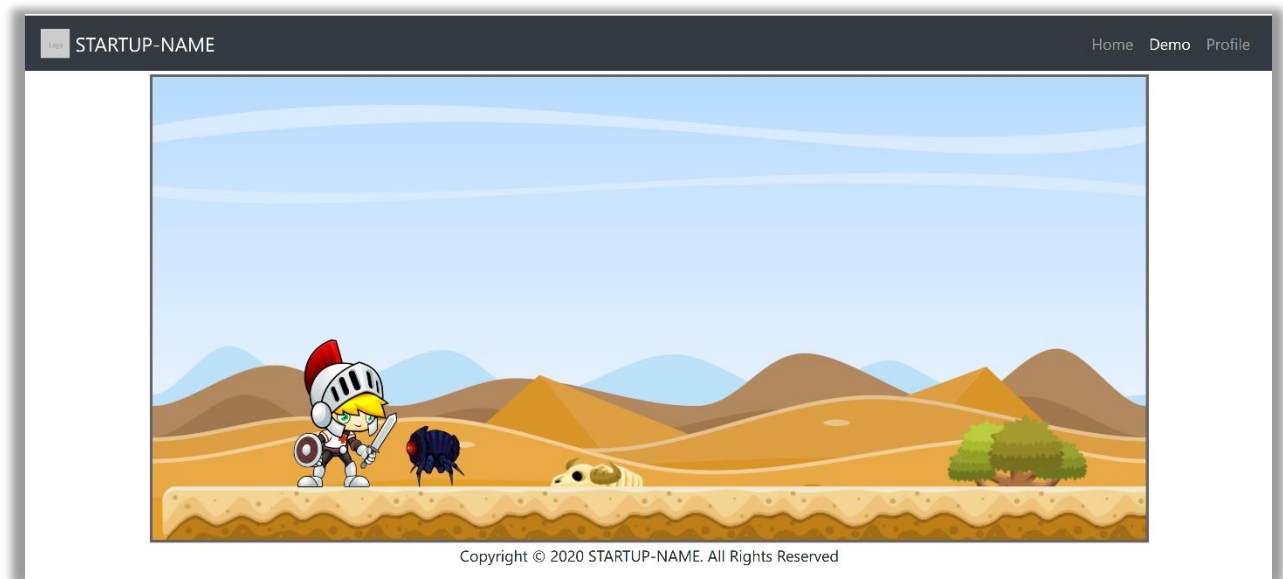*"We learn by doing because we do by learning" – Saji Ijiyemi (Author)*

2020 Projects ▶ Web Apps

(Deadline: 14th June 2020)

STARTUP-NAME   Home **Demo** Profile

If you have any questions, issues, or concerns:

🌐 *https://www.stemloyola.org*   ✉ *stemloyola@gmail.com*   🐦 *@STEMLoyolaTZ*

Background

You have been accepted for a field in a technology startup in Dar es Salaam. This is your first field and you are determined to excel despite your lack of extensive experience. So, you still have a lot to learn about working in real-world projects and working for a company.

On your second week, your supervisor mentioned about a STEM initiative that the company was volunteering for. The supervisor explained that the company believes that students who play constructive computer games for not more than 30 minutes per day study better than those who do not. To demonstrate this, the company instructed students who were doing the same field, the previous year, to create a demo computer game. The students were to create a website that will explain the company's beliefs about computer games, have a game that students can play online, and include a profile page with details of the student who created the website.

Unfortunately, the student who started the website could not finish due to time constraints. Your supervisor wants you to complete the website and the demo game. The supervisor reminded you that you mentioned in your CV that you know *HTML*, *CSS*, and *JavaScript*. You studied these during your time at Loyola High School. So, the supervisor is confident that you can finish the project in the one-month period of your field.

Before your supervisor leaves, remembered to mention that the other student had build the website using *Bootstrap* and had used *P5.Play* to easily build the game. Although you mentioned that you do not know either of the two, your supervisor reminded you that in your CV, you said you a quick learner and a hard-working student. So, the supervisor believes that one month you have is enough to learn a little of Bootstrap and P5.Play, study the existing code, and finish the missing components.

Project Learning Objectives

The objective of this project challenge is to expose you to the realities of real-world work in technology. Constantly and quickly, you need to:

i.   Study and use the source code written by others in your own applications. When working in groups, you will need to be able to read and understand other people's source code. Also, in today's world, your applications will need to integrate with other people's systems (google maps? Social media?).

ii. Learn new programming languages or technology that you need to accomplish a certain task. Usually, building new applications and systems will require learning new languages, frameworks, libraries, and the like.

iii. To accomplish the two above in limited time.

Project Technical Objectives
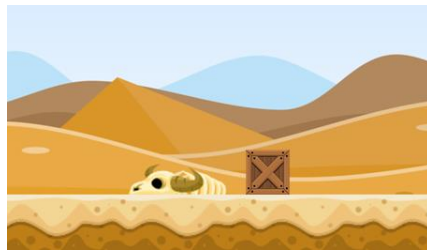
1.   Home Page

Your Home page should look like the image below. You should find a meaningful name for your startup and write useful description in the text placeholders. The social media icons at the bottom (at least three) should point to your actual social media pages. If you do not have social media accounts, point them to the STEM accounts. The demo image should be a screenshot from your actual game. You can add more details and information but all items in the image below should also be available.
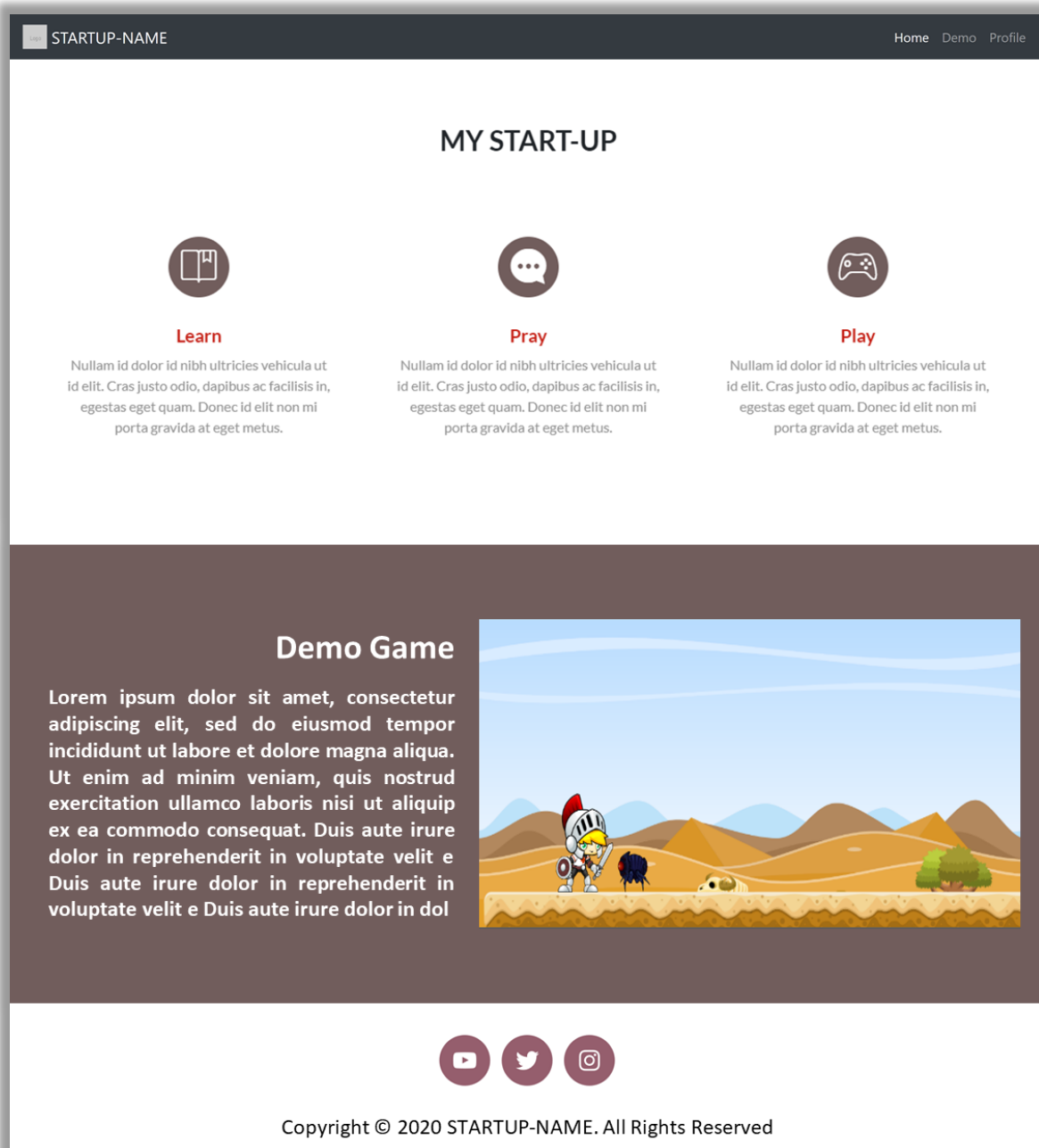
2.   Demo Page

You should complete the demo game to include the following requirements:

i.   The game should have a total of twenty (20) coins distributed around different points in the game. All coins should be spinning. Five(5) coins should be moving up and down apart from spinning. The fighter should be able to capture any coin it touches.

ii.   The game should have at least three (3) monsters. Only a single monster can appear at a time.

iii.   Add one crate after the skull and two mushrooms next to the cactus as background objects. Like the skull and cactus, the fighter should not be able to interact with these objects. This should appear as shown below.

iv.   Display the fighter's current score at the top left corner. Score should be calculated and displayed as shown below.
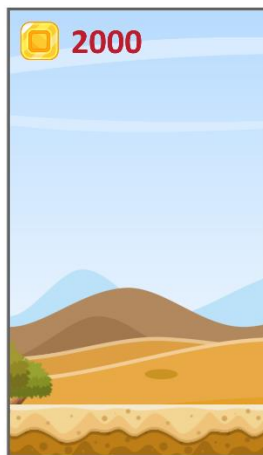

Fighter's Score = 1000 x Coins-Touched

v.   Display the words "Game Over" and total scores at the middle of the screen when the fighter either:

    a.   Touches any of the monsters.

    b.   Touches all the 20 coins.

    c.   Walks out of the screen window.

vi.   The fighter should only be able to move to the right and jump. The fighter cannot move and jump at the same time.

3.   Profile Page

Your Profile page should look like the image below. You should write useful description in the text placeholders. The social media icons at the bottom (at least three) should point to your actual social media pages. If you do not have social media accounts, point them to the STEM accounts. You should write a brief description of your aspirations and plans. For the profile picture, you can either include an actual picture of yourself or another picture that you have taken yourself. You can add more details and information but all items in the image below should also be available.
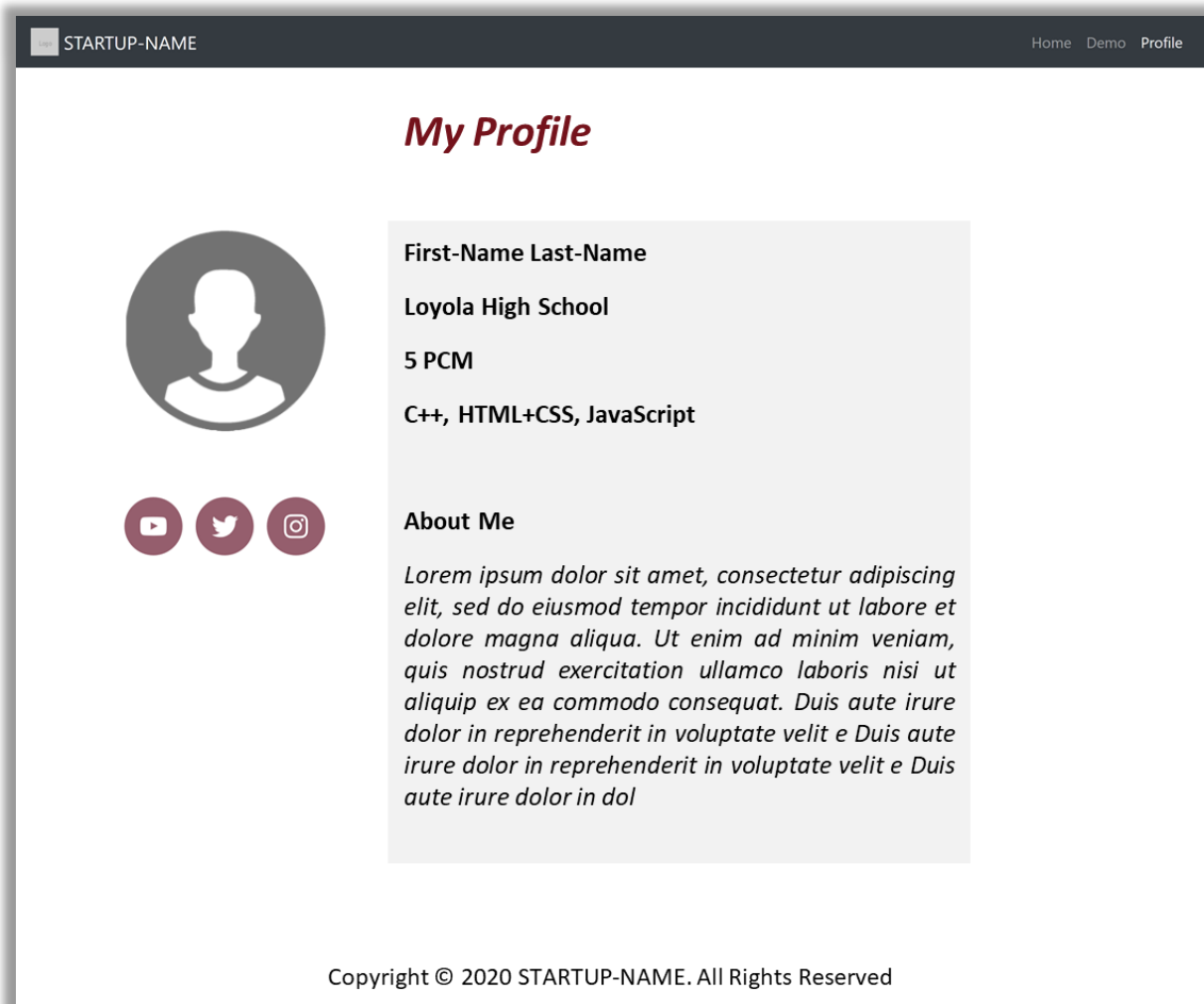
Important Note and Submission

This project should be completed by both the Novice and Advanced students. The Novice students are expected to complete the Home and Profile pages. On the other hand, the Advanced students are expected to complete all the three pages.

Instructions for submitting your solution will be provided soon.

Resources and Tutorials

1.   Visual Studio Code (Recommended IDE)

   a)   Official Download

Download from: https://code.visualstudio.com/?wt.mc_id=vscom_downloads

VS Code can be configured to run all the programming languages used for STEM Loyola (e.g. C, C++, Java, Python). You will need to ensure that proper compilers/interpreters are installed

   b)   Live Server Extension – *code like a pro*

Link: https://youtu.be/pKsvDf-sJQE

This Visual Studio Code extension will enable you to automatically see the changes you are making to your website in the web browser soon after you save your ".html", ".css", or '.js" file, without a need to refresh the browser page.

Also, if you have a strong computer/laptop, you can enable automatic saving (https://youtu.be/y4qqQeUDCBQ). You can set a delay of, say 2 seconds), and 2 seconds after you stop typing, Visual Studio Code will automatically save all your source code files and refresh the browser.

2.   HTML and CSS

HTML Crash Course for Absolute Beginners: https://youtu.be/UB1O30fR-EE

CSS Crash Course for Absolute Beginners: https://youtu.be/yfoY53QXEnI

HTML Cheat Sheet: https://challenges.stemloyola.org/assets/references/html-css/The-Complete-HTML-Cheat-Sheet.pdf

3.   JavaScript

JavaScript Tutorial for Beginners: https://youtu.be/W6NZfCO5SIk

JavaScript Cheat Sheet: https://challenges.stemloyola.org/assets/references/javascript/JavaScript-Cheat-Sheet.pdf

4.   Bootstrap HTML, CSS, and JavaScript Library v4

   a)   Official Reference

Bootstrap is the most popular HTML, CSS, and JavaScript library that enables building fast and responsive websites.

Official Documentation: https://getbootstrap.com/docs/4.5/getting-started/introduction

b) Bootstrap 4 Tutorial

Start with video #2 because video #1 was relevant before the official version 4 was not released.
https://www.youtube.com/playlist?list=PLRtjMdoYXLf47brThg9-nTj8HSq8cQ0ND

5.   p5.js and p5.play Libraries

a) Official References

p5.js is a JavaScript library for creative coding, with a focus on making coding accessible and inclusive for artists, designers, educators, beginners, and anyone else.

Official *p5.js* reference: https://p5js.org/reference

p5.play is a *p5.js* library for the creation of games and playthings.

Official *p5.play* reference: https://molleindustria.github.io/p5.play/docs/index.html

b) p5.js Tutorials from Beginner to Advanced

https://www.youtube.com/playlist?list=PLglp04UYZK_PrN6xWo_nJ-8kzyXDyFUwi