Google Summer of Code 2023

Web Accessibility for p5js.org and documentation

Basic Information

Name: Ashish Kushwaha
Major: Computer Science and Engineering
Degree: Bachelor of Technology
Year: Sophomore
Institute: JSS Academy of Technical Education Noida
Email Address: ashishkushwahacb@gmai.com
GitHub: **AshishKingdom**
Processing Forum: **ashishkingdom**
Timezone: Indian Standard Time (UTC +5:30)

Project Abstract

I propose to work on improving the accessibility and user experience on p5js.org website so that it can become more accessible and easy for newcomers to follow up on the website. I have the idea to introduce high contrast theme (for low vision/photosensitive people), adding describe() and other p5.js accessibility functions to a maximum number of sample codes to improve the screen-reading experience, add new tutorials and improve user experience on the reference page.

The goal of this project is to make p5js website and its example codes more accessible to the audience, improve user experience on the reference page as well as the documentation page and add contribute a new tutorial.

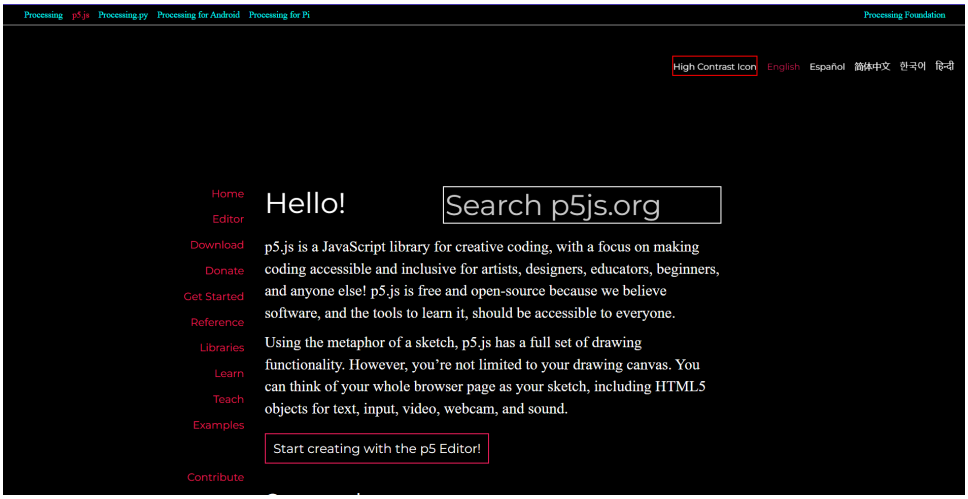
Project Description

While browsing the p5js website, I found a few things which needed to be added or improved. These ideas will help us to target even more audiences and people with different backgrounds. The project ideas will impact more on people with low photosensitivity, people who are new to creating coding, people who are new to documentation, etc.

The ideas are as follows: -

- **Adding high contrast mode**

  High contrast mode is an accessibility feature that alters the color of websites/apps to maximize legibility. It's popular among people with low vision or photosensitivity. We can have a little button at the top-right corner (just near the language selection area) for switching between these modes. This will be very useful for people who have low photosensitivity.



A possible Design of p5.js homepage with high contrast mode

- **Adding accessibility function *describe()* to the code samples.**

  I love how the p5.js describe() function helps people with visual impairments. Most of the examples which are listed on the reference page do not have *describe()* function included with them. I think it will be great to have *describe()* to each of these examples. This will make the reference page more friendly to website visitors. I am willing to add *describe()* to the maximum number of sample codes available on the reference page. I can expand this work to the examples page, if there is more time available.

- **Adding a new tutorial section for *noise()***
  noise() is one of my favorite function of p5.js to me. It can be used of variety of purposes. From generating textures to giving natural motions to rendering objects, it can be used for many purposes. I will be very happy to contribute a beginner-friendly tutorial on this covers some basic concepts of what noise() is, how to use 1D noise() as well as 2D noise() to bring life to your sketches. The main audience of this tutorial is to make the new audience or beginners.

Below is the general roadmap of how the *noise()* tutorial going to be -

- ★ Basic Intro about *noise()* (with some little history maybe)
- ★ Difference between *noise()* and *random()*
- ★ Comparing *noise()* and *random()* by visualization
- ★ Syntax of 1D/2D/3D *noise()*
- ★ What is *noiseDetail()* and *noiseSeed()*?
- ★ Applications of *noise()* -
    - Generating textures (step-by-step code follow-up)
    - Natural Motions (step-by-step code follow-up)
    - Terrain Generations (step-by-step code follow-up)
- ★ Further Resources and more possibilities
- ★ Encouraging readers to create something creative with noise() and sharing on social media (**optional**)

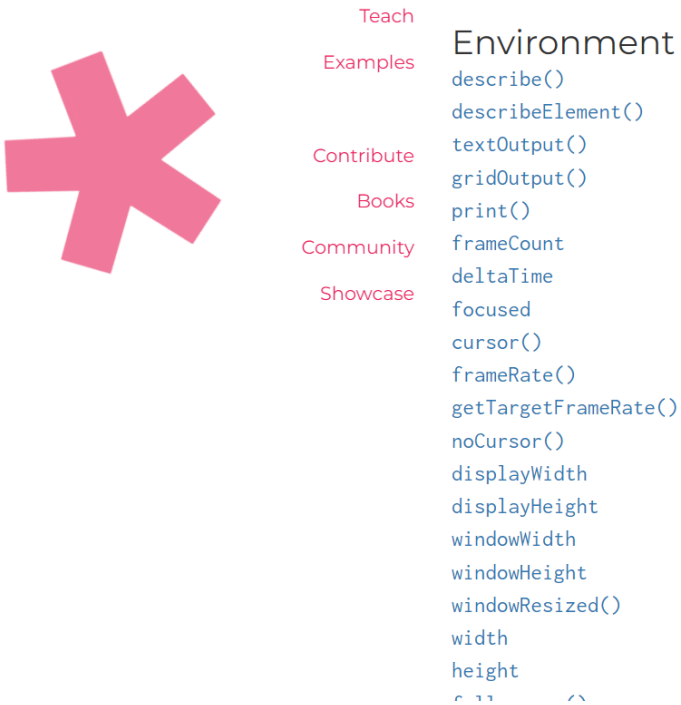
- **"See Also/Related function" section on the reference page**

  We can add a new section "See Also" or "Related function" at the bottom of each function documentation on the reference page. This will help the user easily find the other related function without going back to the previous page. This saves a lot of time as most of the time we are usually looking for help on a similar set of keywords. For example, if the user is on the reference page of *blue()* function, then the "See Also" section will contain *red()*, *green()*, *alpha()* keywords.

  One of the simple approaches to implement this is to fetch all the keywords which are in the same domain/categories of the current keyword. These keywords are the one which are closely related to currently opened keyword.
  We can implement above approach by creating a dictionary object which stores the "list of keywords" as value and "categories name" as key.

- **Alphabetical arrangement of keywords on reference page**

  I personally find it easy to search keywords when they are arranged in sorted order or in alphabetical order. Some of the current listings of keywords under the categories is not in alphabetical order; switching to alphabetical order makes it easy to look for keyword a person is searching.
  The below image is one of the examples where the alphabetical arrangement is missing.



Development Process

The skills required for implementing the above ideas are HTML, CSS and JavaScript along with some knowledge of p5.js library. I will start by discussing the ideas in more detail with mentors and by understanding the codebase of p5js.org website. This will help me to get familiar with the website code.

Timeline

Time Period	Tasks
May 4 - May 28	**Community Bonding Period** ● I will discuss the project ideas in more detail with my mentors. ● I will understand the codebase of

	p5js.org website and will plan rough ideas for implementing my work.
29 May - 18 June (Week 1,2 & 3)	● Working on design and color schemes for high-contrast mode ● Getting feedback from mentors and making the new design and colors final. ● Start gathering resources for *noise()* tutorial section
19 June - 9 June (Week 4,5 & 6)	● Implementing high contrast mode ● Code cleanup and fixing any possible bugs ● Start writing tutorial for *noise()* simultaneously
10 July - 14 July	**Midterm Evaluation**
15 July - 6 August (Week 7, 8 & 9)	● Start working on “See Also/Related keywords” section ● Testing the implemented feature and fixing any possible bug. ● Get feedback from mentors and make the necessary changes in noise tutorial
7 August - 28 August (Week 10, 11 & 12)	● Changing the order of keywords to alphabetical order on reference page ● Adding *describe()* to examples code on p5js.org simultaneously ● GSoC Project completion and final evaluation by the mentors. ● Additional work on *noise()* tutorial (if incomplete)
28 August - 4 September	**Final Evaluation**

About Myself

I am Ashish Kushwaha, a sophomore undergraduate student. I am pursuing my Bachelor’s in the field of Computer Science from JSS Academy of Technical Education, Noida. I love open

source and have contributed to personals project of many people. I have experience working in programming languages like C, C++ and Python. I've also worked on web technologies like HTML, CSS, JavaScript and have used libraries like jQuery and p5.js. This is my first time participating in Google Summer of Code. I am part of Google Developer Students Club of my college and have conducted various workshops affecting 100+ students. I am also part of QB64 community and have written various tutorials for them.

I love solving puzzles, riddles and making algorithmic designs/simulations. I also love participating in competitive programming. I have worked on several projects which involve web technologies as well as system programming languages like C/C++. Currently, I'm learning Unity and exploring indie-game development.

Why Processing Foundation?
I have chosen Processing Foundation because of its commitment to promoting software literacy within visual arts. Their work in open-source software and fostering a community of artists, educators, students, etc is truly inspiring.

I found p5.js during my teenage through a youtube video of Daniel Shiffman (The Coding Train) and I loved it so much. I, along with my friend have created an equivalent version of p5.js in QB64 Language which can be found here - https://github.com/AshishKingdom/p5js.bas
P5.js had a great impact on my tech journey and I would love to contribute to Processing Foundation and its community.

Post GSoC
By the end of the project, I will gain experience in making websites more accessible to audiences. I will still be part of the community and will contribute wherever I can. I will make sure to finish all the pending tasks (if any) after GSoC. I will also be happy to answer all future queries related to my work on the forum. I would also love to write theme-based tutorials for the p5js website.