PyBlocks

Milestone 5 Evaluation

Team Members

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Client

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Progress of Current Milestone (Progress Matrix)

Task	Completion Percentage	Michael	Bailey	Xinjie	Olisemeka	Todo
1. Add more grid world specific blocks to allow for more in depth interaction.	100%	100%	0%	100%	0%	-
2. Add a visual area for the user to be able to see the items that the grid world character has picked up.	100%	100%	0%	0%	100%	-
3. Continue to work on writing and improving the tutorials along with their try-it sections.	90%	0%	100%	100%	100%	The tutorials can always use more fine tuning and improvement. It's hard for them to be perfect.
4. Create try-it questions in both the multiple choice and “fill in the blank” format.	100%	0%	100%	100%	100%	-
5. Complete the code saving system and user authentication system.	100%	100%	0%	0%	0%	-
6. Users are able to code with just blocks, hybrid blocks and text, and just text.	100%	100%	0%	0%	0%	-
7. Finish Evaluation System, then Conduct Evaluation and analyze results.	35%	35%	0%	100%	100%	We have begun talks with teachers at Central Middle, but nothing is on the books yet.
8. Create the poster and e-book page for the Senior Design Showcase.	100%	5%	0%	50%	50%	-

Discussion (at least a few sentences, ie a paragraph) of each accomplished task (and obstacles) for the current Milestone:

Tasks:

- 1. Add more grid world specific blocks to allow for more in depth interaction.
    - There wasn't really any progress made towards this task this milestone. We have been kind of hitting a wall. This is because new grid world interaction blocks take a long time to implement and test and it can be very difficult to think of new blocks. We believe that the blocks we already have are sufficient and decently varied as well.
    - Due to the time it takes to implement them and the fact that the end of the project is approaching, we have been debating whether it's better to focus on this task or on other tasks. New blocks have kind of taken a back burner for this milestone due to these things. If we get really inspired by a new block idea we would like to implement it but we will need to make sure to temper our expectations as well since we might just not have the time.

- 2. Add a visual area for the user to be able to see the items that the grid world character has picked up.
    - This task was fully completed. We had some issues with getting the inventory fully implemented with the code generator but the fix was pretty easy to find and fix. There could be improvements to this feature like improving the style of the inventory, or adding some blocks to interact with the inventory. Overall, this wasn't a crazy complex task like some of the other ones we have done.

- 3. Continue to work on writing and improving the tutorials along with their try-it sections.
    - We have continued to work on the tutorials and focused mainly on creating the "basic" and "variables" tutorials while also fixing up the other ones. We are slowly getting better and better at creating the tutorial pages but it is surprisingly difficult to create these tutorials and have them be good without revising many times. I think it's important to get users, and professionals in the teaching space, to evaluate the tutorial pages as they can provide a lot of good insight into what works and doesn't work for the tutorial content. It probably would be good to talk to middle school computer science teachers about the content and style they use to create content that better fits our goals sooner.

- 4. Create try-it questions in both the multiple choice and “fill in the blank” format.
    - We were able to complete this with no big issues and with nothing very interesting to report on. This task was a simple one of just changing some questions and the answer format around.

- 5. Complete the rudimentary code saving system and user authentication system.
    - We had to make this task much simpler than the grandiose ideas we wanted to implement at first. Because of the tools we chose to use for the project an authentication system is very hard and impractical to implement. The solutions were to either rewrite the whole code base or just change the scope of the task so we changed the task. We implemented a cookie system like one of the groups at our presentation mentioned to give users a unique id that is tied to the file where the code they save is located on the server. Since we changed to using cookies it might be worth rethinking how we save code entirely and instead of saving them in a file on the server instead we save the codes themselves in a cookie.

- 6. Users are able to code with just blocks, hybrid blocks and text, and just text.
    - We had implemented text only near the beginning of the project so this task was just a matter of doing it again. A lot has changed in our code since the first few weeks of our project and the task effectively turned into a complete rewrite. Despite this fact we were able to implement the text only editor and have a button to switch between them. I was able to get both editors working so the saving, loading, and executing works correctly and only interacts with the currently active editor. There are still some style issues with the text only editor, like it getting unaligned when pressing f12 and a lack of code highlighting.

- 7. Finish Evaluation System, then Conduct Evaluation and analyze results.
    - Not a lot has been done for this task. I have reached out to three different Middle Schools nearby. They were Stone Magnet Middle, Central Middle, and West Shore Middle. So far we have only heard back from Central Middle and we are in the process of planning a date to go and have the students try out our project. Based on how the planning goes with the teacher at Central Middle we may need to change our evaluation plan to fix the testing into a class period and be more acceptable to what the teacher is willing to allow. Like for instance I don't think we will be able to test out much of the tutorial section of our project just due to time constraints. We will have to see what kind of compromise we can create with the teacher and our goals.
    - I would also like to continue to improve the look of our system before showing it to the kids so that it looks as good as possible.

- 8. Create the poster and e-book page for the Senior Design Showcase.
    - This was done with no major issues. It was a bit vague at times to follow the formatting templates but not that bad.

Discussion of contribution of each team member to the current Milestone: **(Paragraph/few sentences)**

- Michael Bardin:
    - Michael focused on the inventory implementation, adding cookies to update the saving and loading system, reaching out to local middle schools to try and schedule a time to get some evaluation data, and did most of the work on the progress evaluation document and the presentation slides.

- Bailey Smith:
    - Bailey did basically all of the work on the tutorial and try-its. Bailey also helped out with the progress evaluation and presentation by proofreading them and providing some content.

- Xinjie Zhuang:
    - Xinjie worked on the poster during this milestone and while it took a long time to be finished it was finished on time to a decent standard.

- Olisemeka Adugwo:
    - Olisa worked on the e-book page during this milestone and while it took a long time to be finished it was finished on time to a decent standard.

Plan for next Milestone

Task	Michael	Bailey	Xinjie	Olisemeka
1. Add a lock to the execute button so it can't be pressed while an animation is playing and a cancel animation button.	Will focus on this task.	Will provide help if needed.	Will provide help if needed.	Will provide help if needed.
2. Continue to improve the tutorial and try-it sections	Will provide help if needed.	Will focus on this task.	Will provide help if needed.	Will provide help if needed.
3. Go to a Middle School and have the students try our application.	Will focus on this task.	Will provide help if needed.	Will provide help if needed.	Will provide help if needed.
4. Implement changes from our evaluation results.	Will focus on this task.	Will focus on this task.	Will provide help if needed.	Will provide help if needed.
5. Change the saving and loading system so that any file can be loaded into the block editor or text editor.	Will focus on this task.	Will provide help if needed.	Will provide help if needed.	Will provide help if needed.
6. Implement highlighting in the text only editor to make it easier to understand what is going on when coding in text only.	Will focus on this task.	Will provide help if needed.	Will provide help if needed.	Will provide help if needed.
7. Grid World Improvements: Map Switch functionality, Reset Map Button, Bigger Maps.	Will focus on this task.	Will provide help if needed.	Will provide help if needed.	Will provide help if needed.
8. User and/or Developer Manual	Will provide help if needed.	Will focus on this task.	Will focus on this task.	Will focus on this task.
9. Demo Video	Will provide help if needed.	Will focus on this task.	Will focus on this task.	Will focus on this task.
10. Implement the discussed changes to the poster and e-book page.	Will provide help if needed.	Will provide help if needed.	Will focus on this task.	Will focus on this task.

Discussion (at least a few sentences, ie a paragraph) of each planned task for the next Milestone:

- 1. Add a lock to the execute button so it can't be pressed while an animation is playing and a cancel animation button.
    - One of the bugs I have recently discovered is that if you click the execute button while an animation is playing it causes some errors on the server side in generating and running the code. The easiest way to fix this issue is to just "lock" the execute button so it can't be pressed repeatedly. I also noticed that when slowing down the animations sometimes they can take a while to finish but if you mess up your code you don't want to wait forever for the animation to finish. A way to prevent the user from being soft locked I want to implement a "cancel" button to reset the gridworld to right before you press "execute".

- 2. Continue to improve the tutorial and try-it sections.
    - This is a task that we need to keep working on. The tutorials are probably never going to reach perfection but it is important to keep improving them.

- 3. Go to a Middle School and have the students try our application.
    - I have been in talks with the Central Middle principal and one of their computer science teachers to try and schedule a time to have their students use our system. I have no idea if we will be able to get anything planned or what the evaluation will look like as it is too up in the air. I hope we will be able to plan something.

- 4. Implement changes from our evaluation results.
    - This is reliant on task 3, and actually getting some user feedback. Depending on the timeline for task 3, this task may have some difficulties being completed since we are entering our last milestone.

- 5. Change the saving and loading system so that any file can be loaded into the block editor or text editor.
    - Right now the system saves the code as a .py file if you are in the text only editor and as a .xml file if you are in the block editor. This is because the block code and text code are completely different. I would like to change it so it only saves as one file type and the code can be loaded into either editor. This would probably require saving both code generations in one file then parsing out the needed one when a request to load a file is made. Or possibly leveraging the cookie system completely to save the codes so no files need to be saved on the server.

- 6. Implement highlighting in the text only editor to make it easier to understand what is going on when coding in text only.
    - I noticed that it is pretty difficult to tell what is going on in the text-only editor without syntax highlighting. I think I just became blind to it while working on the current editor and didn't realize the issue until I came back to the code a few days ago. This shouldn't be too hard to implement as there are many ways to apply syntax highlighting on a webpage, and we just need to get a textarea to be highlighted.

- 7. Grid World Improvements: Map Switch functionality, Reset Map Button, Bigger Maps.
    - There are still some improvements that can be made to the gridworld. Something that we would like to implement but we know we don't have time for now is a map editor so the user can create their own grid worlds. However we can begin building up some prerequisite systems to support gridworld creation and fix some of the pains we have discovered using the grid world. The first thing we want to implement is the ability to switch between some predefined grid worlds, then we want to add a button to reset the world instead of forcing you to reload the page, and then possibly create some bigger maps so the user can interact with more things in one world.

- 8. User and/or Developer Manual.
    - This is a preset task and will basically be just following the guidelines given by Dr. Chan. This should be an easier task as long as it isn't procrastinated. We will probably focus on the user manual.

- 9. Demo Video.
    - This is a preset task and will basically be just following the guidelines given by Dr. Chan. This should be an easier task as long as it isn't procrastinated.

- 10. Implement the discussed changes to the poster and e-book page.
    - We have been given a lot of good feedback on the poster and the ebook page from Dr. Chan so this task is just updating the poster and ebook so it is ready to submit to the senior showcase. It should be a pretty easy task to complete with no big hurdles to avoid.

Dates of meeting(s) with Client during the Current Milestone:

- See Faculty Advisor Meeting Dates Below.

Client Feedback on Current Milestone:

- See Faculty Advisor Feedback Below.

Dates of meeting(s) with Faculty Advisor for the Current Milestone:

- 02/18/22 12pm
- 03/21/22 12pm

Faculty Advisor feedback on each task for the current Milestone:

02/28/22 12pm

1. Slow down the grid world animation speed so the user can see the individual actions.
    a. Possibly put a sleep in between actions.
2. For the try-it sections.
    a. Add hints when the user gives an incorrect answer to guide them to the correct answer.
    b. Don't do traditional fill in the blank but have the users complete some code. Not an english question but a coding question.
3. Error with the grid world inventory not correctly saving items in the inventory as strings.
4. Integrate programming with text only.
5. Drafts of poster and ebook page.
6. Find students to evaluate the program.

03/21/22 12pm

1. For Try-It sections, for example in the If Statement chapter, focus on the key idea to be practiced
    a. For If Statements, the condition / comparison is the important idea to be practiced.
    b. Exercise: print whether the basket is empty or not given a basket variable assigned to the number of flowers.
    c. If (blank1 > blank2): // expect basket > 0

    d. If blank1 has a number, suggest a variable; If blank1 has a name but not “basket”, suggest a different variable name. Similar suggestions for blank2.

2. Poster
    a. No sentences, smaller text
    b. Key features in order: tribrid, grid world, tutorial.
    c. Change branching tutorial picture to try it section
    d. Zoom into the blocks for the text and block coding image. Only blocks and text.
    e. Flip branching and “combined text and block” picture.
    f. Actually have three pictures shows block only, then hybrid, the text only. Then have arrows going between them.
    g. Remove the branching tutorial image.
    h. Be more specific when talking about the grid world in key features, forest theme. The user can
    i. (in the evaluation section, top right) To show improvement of the hybrid mode in transitioning from block based to text based programming, we can have two groups of students:
        i. Group 1 has block based training only, Then they switch to text based programming.
        ii. Group 2 has hybrid based training, then they switch to text based programming.
        iii. Measure the speed it takes to complete a text based coding challenge.
        iv. Plot a bar graph, with each bar representing one group and have them represent the average time to complete the text-based programming task.
    j. Reduce future work section. Very small section, if it exists at all.
    k. Make the acknowledgement section smaller as well.
    l. Replace future work section with a “design of the system” section, so like the system architecture diagram. + tools that we have used.

3. E-Book Page
    a. Since the ebook page has limited space, just show the hybrid mode picture (and not show block-based or text-based). This way, the pictures could be larger to show more details. So three pictures: grid world, hybrid mode, and plot of evaluation results.

4. For the poster and ebook page, since you don't have evaluation results yet, I suggest an empty plot with labels of the axes. So later on, you just need to add content to the plot.

Faculty Advisor Signature: _____ Date: _____

Evaluation by Faculty Advisor

- Faculty Advisor: detach and return this page to Dr. Chan (HC 214) or email the scores to pkc@cs.fit.edu
- Score (0-10) for each member: circle a score (or circle two adjacent scores for .25 or write down a real number between 0 and 10)

Michael Bardin	0	1	2	3	4	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10
Bailey Smith	0	1	2	3	4	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10
Xinjie Zhuang	0	1	2	3	4	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10
Olisemeka Adugwo	0	1	2	3	4	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10

Faculty Advisor Signature: _____ Date: _____