Name:

Mission 6 Assignment – Heartbeat

In this project you will give CodeX a beating heart. Well, a digital one anyway. You will make it slow down and speed up, just like a real heart does. Mission Reminders.	❤️ **Mission 6: Heartbeat** ✓ Animate a beating heart on the display and learn about the power of loops.

You will create code during this lesson. When you encounter an error, make a note of what is happening and **document your debugging** process in the **table** below.

1. Read the introduction and complete Objective #1 and Objective #2.

2. Objective #3 requires repeated code. Use **Editor Shortcuts!** for this. Click on the wrench and learn more about them. Also, you can watch this video: https://www.youtube.com/watch?v=WItk_kpkGiU
3. Now list three editor short-cuts:

Short-cut:	What it does:
Short-cut:	What it does:
Short-cut:	What it does:

4. Complete Objective #3 and begin Objective #4. Click on the wrench for **LOOP** and read about the while loop (no need to go further right now). Close the toolbox and finish reading the instructions about a while loop and its indenting.

What type of value is True?	
What type of loop does "while True" create?	

5. Complete Objective #4. Keyboard shortcut: to quickly indent code that is already typed, you can highlight the code and press TAB. You only need ONE heartbeat cycle in the loop, so remember to delete all the extra code you added for Objective #3.

6. Complete Objective #5 and Objective #6. Be careful of your indenting!

How do you code a "kill switch"?	

7. Go to Objective #7. Answer the review questions:

Review the "if" statement and what it does:	
Review CodeX input	

8. Complete Objective #7. Use the debugger ⬛ and step through **Step Over** button your code.	

9. Complete the Quiz and go to Objective #8.

What is a "float"?	
Give an example (different from pi)	

10. Complete Objective #9, Objective #10 and Objective #11. Answer the questions from #10 & #11.

What does "delay = delay + 0.2" do?	
What does "delay = delay - 0.2" do?	

Notice that if you press Button B too many times, an error will occur.

Why does an error happen?	

11. Complete the Quiz. Then go to the extensions.

EXTENSION #1:
Using a different button (not A or B) program a "kill switch" to end the program.

EXTENSION #2:
You have determined that an error occurs (and stops the program) when the value of delay is below 0. Add some code to your program that will keep this from happening.
- HINT – one way to do this is to add an if statement inside the if buttons.was_pressed(BTN_B) block that only subtracts if delay is more than 0.2. This isn't the only way to do it, so you can be creative and come up with your own way to keep the program from crashing.

EXTENSION #3:
Create a flowchart of your completed program.

To turn in the assignment, download your code (FILE-DOWNLOAD), which will be a text file. Add your name in the filename. Then submit the file through Google Classroom or the class LMS.

Debugging Table

As you create code, you will make mistakes. Keep track of the mistakes in the table below. Doing so will help you become a more confident programmer. Add rows to the table as needed.

Error message that is displayed	Actual bug	How you fixed it

SUCCESS CRITERIA:
- ❏   Create a debugging table that documents your debugging process
- ❏   Create a program that shows a beating heart using an infinite loop
- ❏   Include code in the program that speeds up and slows down the heart
- ❏   Include a "kill switch" to stop the program
- ❏   Add code so the program doesn't crash
- ❏   Create a flowchart for the program