Group number: 12

Project title: *Creating DNA from scratch for DNA-based data storage*

Client &/Advisor: *Iowa State University / Meng Lu*

Team Members/Role: *Connor Larson/Software Engineer , Kyle Riggs/Software Engineer , Brandon Stark/Electrical Engineer , Nathan Armstrong/Electrical Engineer , & Lucas Heimer/Electrical Engineer*

- o **Weekly Summary**

    This week we focused on determining the best method for connecting the LCD to our printer. We obtained a Raspberry Pi and began experimenting with it and the components provided to us. We tried to make the connection between the LCD to Raspberry Pi to computer work with the current products, but came to the conclusion that an adapter was needed. Upon further research it was determined that we could use an adapter which could provide the connection directly from the computer to the LCD via an HDMI to DIPI adapter. The component was ordered and will allow us to proceed with testing of the programming of the LCD. We also assigned ourselves roles in the sub-teams which will begin focusing efforts specifically in one area of the project, now that we have the resources available to proceed with the next steps. The sub-teams and roles are as follows.

    1. LCD/LED Hardware Development: Brandon Stark & Nathan Armstrong
    2. GUI Design: Connor Larson & Kyle Riggs
    3. FLow Cell and Controller Design: Lucas Heimer

- o **Past week accomplishments**

    • Team Member 1 (Connor): This past week I worked with the Raspberry Pi. We were able to get it up and running. From here we worked to figure out how to connect the Raspberry Pi to the LCD screen. We brainstormed our options which were using a HDMI, getting a cable adapter, getting a new cable, or getting a new LCD screen with HDMI capability. We are currently exploring the option to connect the screen with an adapter to an HDMI cable. If this properly works, we should be able to control the LCD screen with a computer and have no need for the Raspberry Pi.

    • Team Member 2 (Kyle): Brushed up on my C code because it has been awhile as to start looking into ways to start coding software for a GUI that can be displayed on a screen the user can interact with. Also, looked into different languages and methods for creating a web application we will need.

    • Team Member 3 (Brandon): Worked with the raspberry pi provided by Meng Lu. Researched what connection ports are needed to connect to our current default LCD screen. Talked to Meng Lu and ordered a DIPI-HDMI controller in order to connect the LCD screen to a HDMI.

• Team Member 4 (Nathan): Worked with the current LCD and raspberry pi, and tested for possible compatibility between the two. Researched other LCD possibilities since the raspberry pi does not seem to be compatible with our current LCD.

• Team Member 5 (Lucas): Worked on determining the necessary components needed to connect the LCD to a computer or the Raspberry Pi. Also began research into the next part of the project which is designing a flow cell and controller for DNA synthesis.

- ## Pending issues

    • Team Member 1 (Connor): Waiting to figure out how we will connect to the LCD screen so I'm able to start writing code.

    • Team Member 2 (Kyle): Not entirely sure if a GUI is needed for the LCD, web, or both. Need to wait for our parts to arrive to see what actually needs to be done.

    • Team Member 3 (Brandon): Waiting on the DIPI-HDMI controller that was ordered. It should arrive on the next upcoming Monday or Tuesday

    • Team Member 4 (Nathan): Waiting for raspberry pi compatible LCD to progress further. Also determining the required parts for our flow and cell controller.

    • Team Member 5 (Lucas): Currently we are waiting on components to come in to connect the LCD to the computer where it can be configured based on the needs of the project. Need to determine all the necessary components and process steps for the flow cell and controller.

- ## Individual contributions

NAME	Individual Contributions	Hours this week	HOURS cumulative
Member 1 (Connor)	Explore the Raspberry Pi, figure out how we will connect to the LCD screen.	6	30
Member 2 (Kyle)	Looked a lot into C code and methods for creating web applications	6	30
Member 3 (Brandon)	Ordered DIPI-HDMI controller, worked with the Raspberry Pi, and researched connection ports	6	30
Member 4 (Nathan)	Used the raspberry pi to try to interface with the LCD screen. Then researched new LCD screens and whether they would work for our project	6	30
Member 5 (Lucas)	Researched the connector needed to attach LCD to computer or Raspberry Pi. Research on the flow cell and controller portion of the project	6	30

- **Plans for the upcoming week**

    ・Team Member 1 (Connor): Once we receive the adapter, we hopefully will be able to finalize how we will connect to the LCD screen. Once we have done this, I will be able to start creating a program to display the desired images on the LCD screen.

    ・Team Member 2 (Kyle): Going to try and start writing some primitive code that will show some sort of GUI on the LCD screen

    ・Team Member 3 (Brandon): Once the DIPI-HDMI controller gets in, Nathan and I will work on LCD/LED hardware development.

    ・Team Member 4 (Nathan): Working within our sub-teams to focus on one aspect of the project at a time, such as the LCD screen compatibility and the flow cell and controller.

    ・Team Member 5 (Lucas): Now that we have created sub-teams and designated our roles, the plan is to focus more on the flow cell and controller. The main goal will be determining the required components and process steps we will need in order to make the device sufficient for the needs of the project.

- **Summary of weekly advisor meeting**

    In the meeting with our advisor this week we discussed the best method for connecting the LCD to the computer in order to control the liquid crystal for our imaging purposes. We researched adapters and the different options for visual ports which were compatible with our current LCD. At the end of the meeting we decided to order an HDMI to DIPI adapter which could connect the LCD to our computer. The part will arrive in the upcoming weeks and we will be able to proceed with testing.