NFC Task Manager: Schema & Diagrams

NFC Task Manager is a raspberry pi and mobile hybrid project. It combines the use of a Raspberry Pi machine and a mobile phone app to create a desk task manager machine. The tasks can be created on the mobile app. They hold a title, a priority level, a due date and a description. They can then be transferred to the Raspberry Pi through NFC and displayed on the machine. The machine will have a list which can be navigated through, once a task is done, the user can remove it from the active list.

Raspberry Pi Schema

Half of the project is built on a Raspberry Pi. This half is itself split in two parts: the hardware and the software. The hardware is a touchscreen device that displays the tasks that were transferred to the device from the app. The software connects takes the tasks and displays them and has different filters to make it easier to find the task in question.

Hardware

The hardware is made of three components, a Raspberry Pi 4b with 2GB of Ram, a NFC Hat PN532, and a freenove 5″ touchscreen.

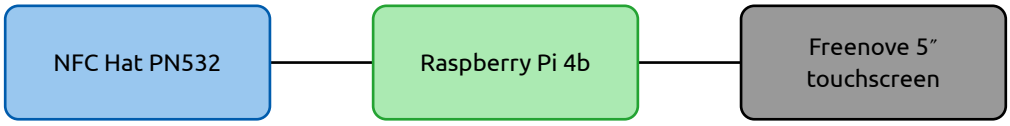

Figure 1: A diagram representing the connections for the hardware

* *Refer to the assembly guide for more details*

Software

The software of the machine does a few things: receive tasks through NFC, display active tasks, filter tasks, delete tasks when done. The software has a simple front end with a few buttons that users can interact with.

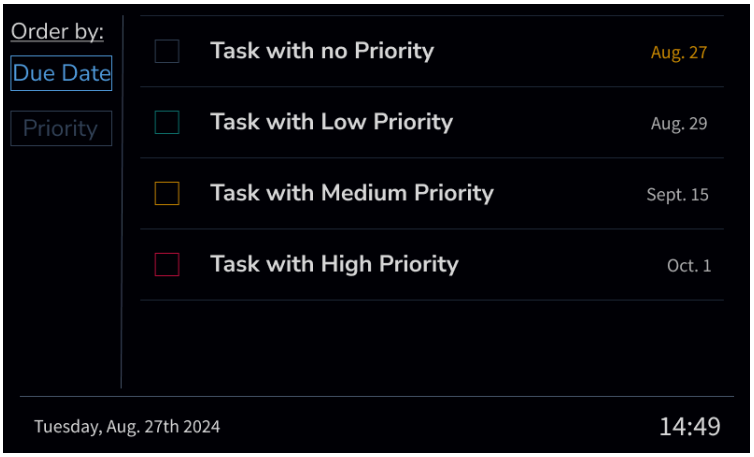

Figure 2: The main screen displays the list of tasks two ways: by due date and by priority. When a task is due day of or is late, the date turns orange to grab the user's attention.

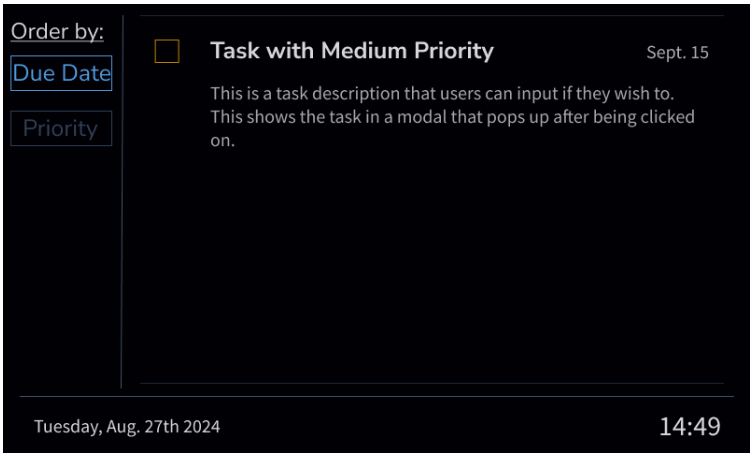

Figure 3: If the user press the task without clicking on the checkbox, the task will open up, showing the description of the task if there is one. Users are encouraged to add a description to not forget details.

Mobile

The other half of the project is on a mobile phone. The app, built in React-Native, lets users create new task and send them to the Raspberry Pi through NFC. The tasks can also be modified before they are sent to the Raspberry Pi. The app's design and workings is borrows a lot from my Shift Notes project. This facilitates my work, and also gives a good working basis for the app and a good basis for the design.

Communication

The communication between the app and the device use NFC. When the user is ready to send a task to the device, they activate the NFC communication on their phone and approach their phone to the NFC reader at the back of the device. Once the phone is recognized by the Raspberry Pi, the task's data is sent to the device which adds it to its own list. Once the phone receives a confirmation that the Raspberry Pi received the task, the task is deleted from the app.

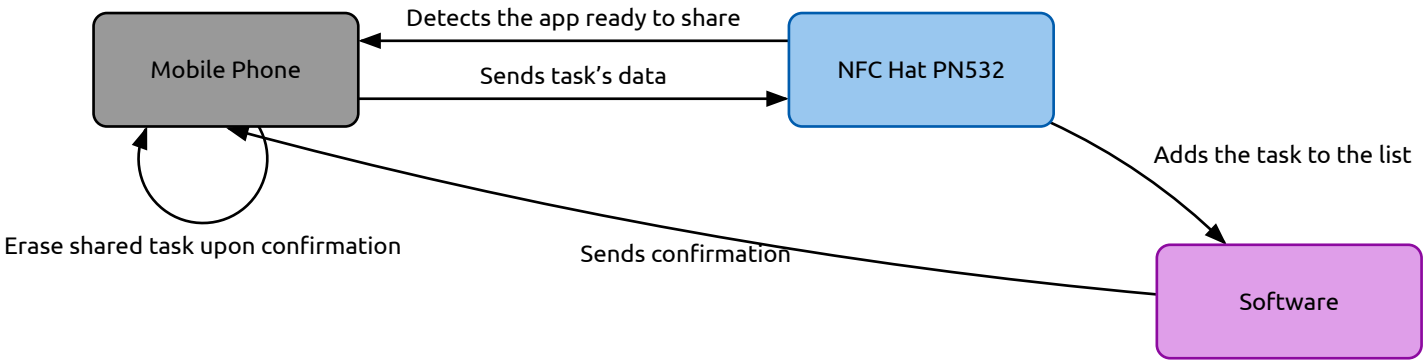

Figure 4: Diagram showing the communication between the app and the desk device