Criterion A: Planning

Defining the problem

The client/advisor, xx, is the current head of computer science at our school. Our school annually hosts an open day to promote our school. My client has a stand where he promotes the school's computer science classes and robotics club. To help promote these students show off interesting projects that they have done to get younger students interested in programming. The client wanted me to show off a project to show how programming had real world applications.

After a bit of thinking I came up with the idea of building and coding a basic printer. After a short interview with my computer science teacher approved of the idea and set some requirements for the project.

Rationale for product

I decided on building and programming a printer to demonstrate how programming is used to make this common household items function. I chose to make the printer out of LEGO Mindstorm parts as this would be appealing for the younger students who would be attending the open day. I used the third generation Mindstorms (EV3) to show what the new students would work with in the first semester in the robotics club. The EV3's used the leJOS firmware that includes a Java virtual machine, allowed it to be programmed with Java. Another reason for choosing Java was that it is the main programming language our computer science class teaches, so I wanted to show the new students what they would be working with if they chose the subject.

Criteria for success

- One can chose what image to print from system.

- The program is compatible with common image file formats (PNG, JPG, JPEG).

- Chosen images can be reformatted to be printed, includes resizing the image and converting into a binary image.

- User can choose brightness of image and how it will be converted to a binary image.

- There are error messages when clients have invalid image selections.

- The printer can print the image with the selected options.

- The program can create a print preview.

- The program has a simple and user-friendly UI.