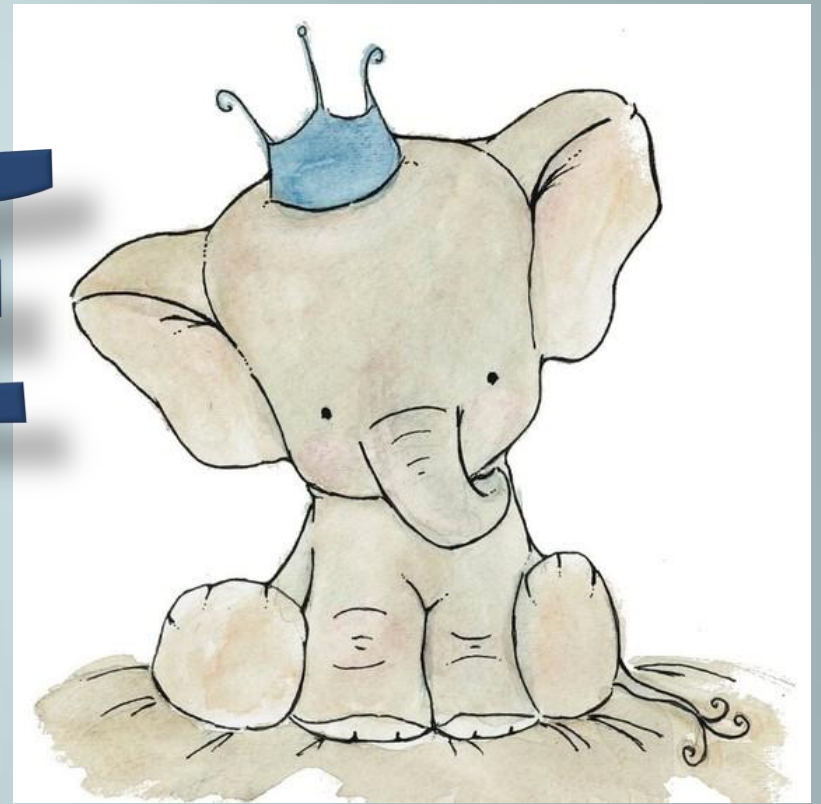# ELLIE

INTERACTIVE TOY FOR AUTISTIC CHILDREN
VIRTUAL PROTOTYPE

ENGINEERING MANAGEMENT 352
PRODUCT DESIGN & DEVELOPMENT

WINTER 2014

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PROJECT SNAPSHOT

- This project is an exercise in moving to the "next" step in the product development process – a Prototype.

- Prototyping relied heavily on previously identified roles and needs (produced during previous exercises and discussions).

- The overbearing theme of the project and this prototype can be summed up as an interactive toy for children with autism spectrum disorder (ASD).

Potential Roles

- Sifting through the potential roles this toy could play, I settled on the following for my prototype:
  - Scheduler, routine aid
  - Companion
  - Entertainment

- These roles aren't necessarily exclusive of each other and I found that there could be some role overlap with the real product.

NEEDS

- Each of these roles were identified to meet the needs identified for a toy designed for ASD children.

  - Scheduler → Provides structure to the child's day by informing them of planned activities
  - Entertainment → Has features that can be used for play
 - Companion → Keeps child company throughout the day.

Prototype Style

- I decided to produce a prototype using the processing programming language.
  - Processing is a language developed for visual creation.
- After searching for ideas, I came across "Ellie" and could not pass him up! And so he became the backbone of my prototype.

PROCESSING IN PROGRESS...
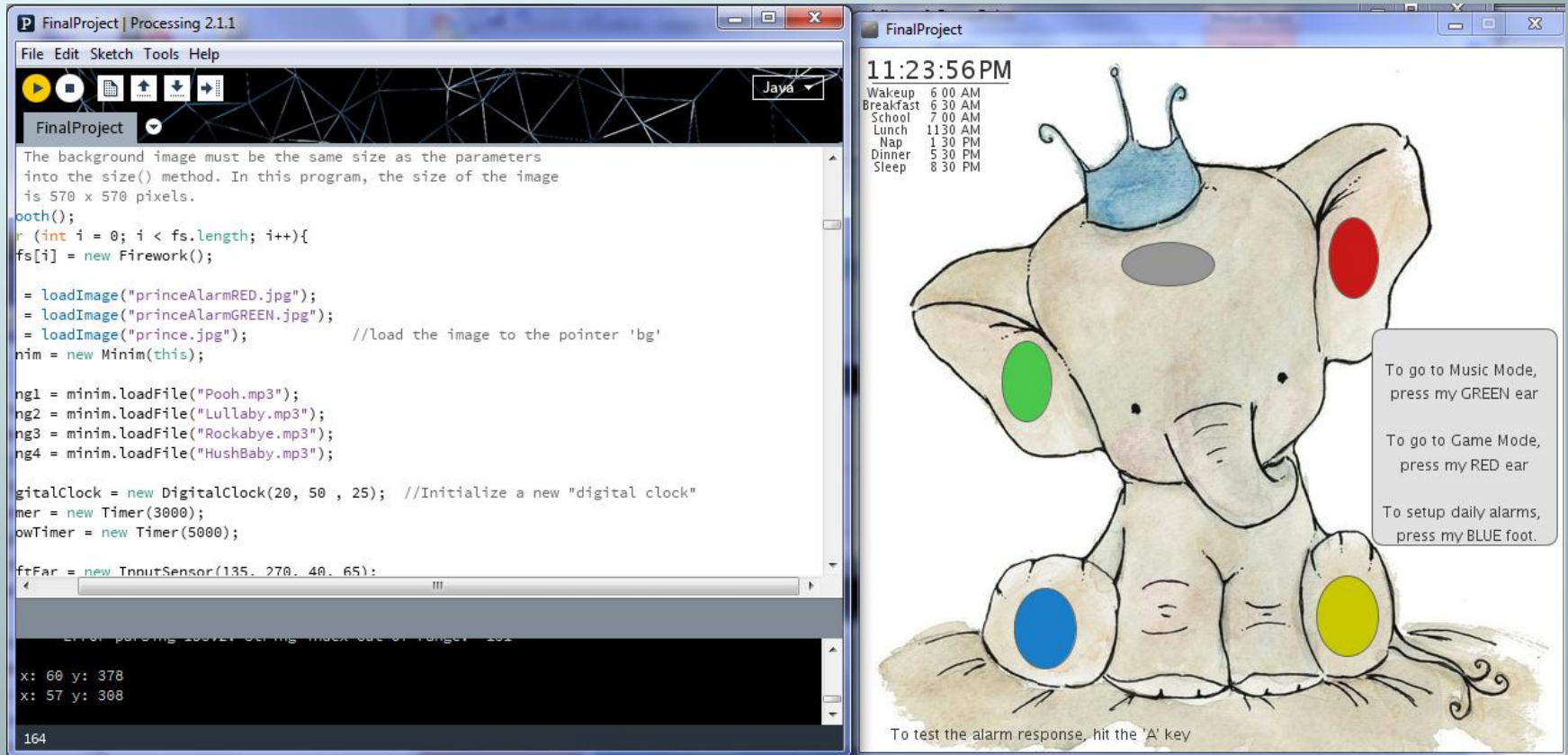
Nuts and Bolts

- I created sensors for input:
  - Ears, feet, trunk, crown
- Output at this stage consisted primarily of speech bubbles (with text-to-speech an awesome follow-up to this)
  - There are also songs that are played as well as a fun little interactive game.
- Program and interaction functionality is all defined within the programming scheme.
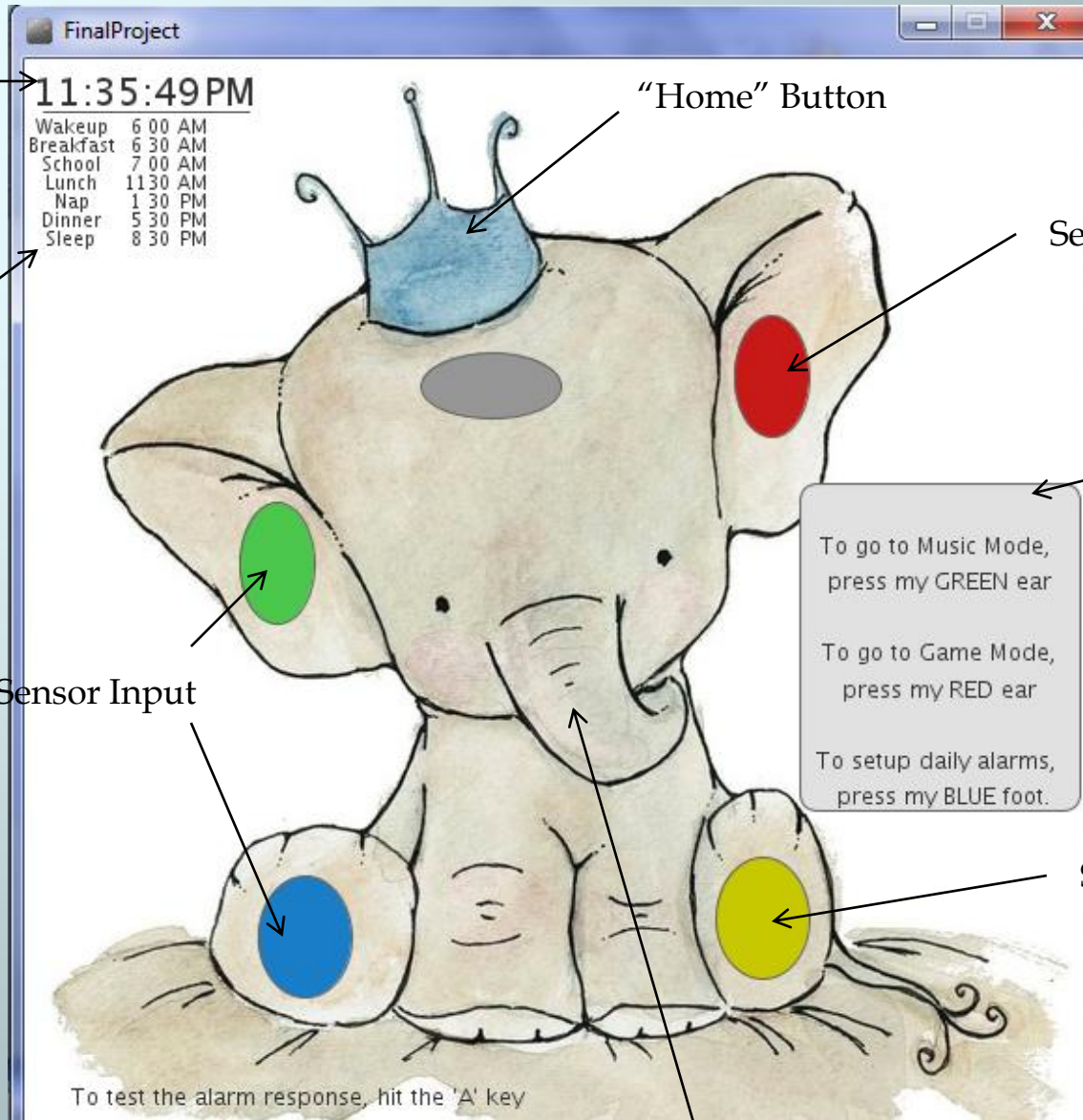
Reference Clock

Current Alarms: names & times

"Home" Button

Sensor Input

Ellie's Communication block.

Sensor Input

Sensor Input

Secret Button

FinalProject

11:35:49 PM

Wakeup   6 00 AM
Breakfast   6 30 AM
School   7 00 AM
Lunch   11 30 AM
Nap   1 30 PM
Dinner   5 30 PM
Sleep   8 30 PM

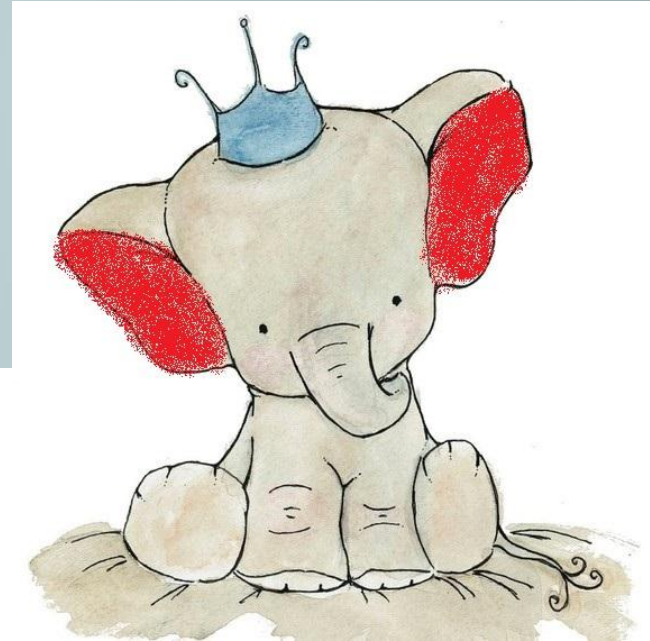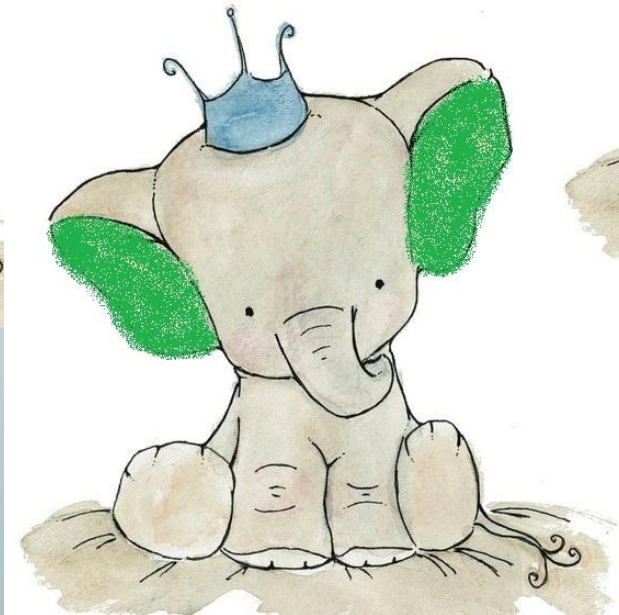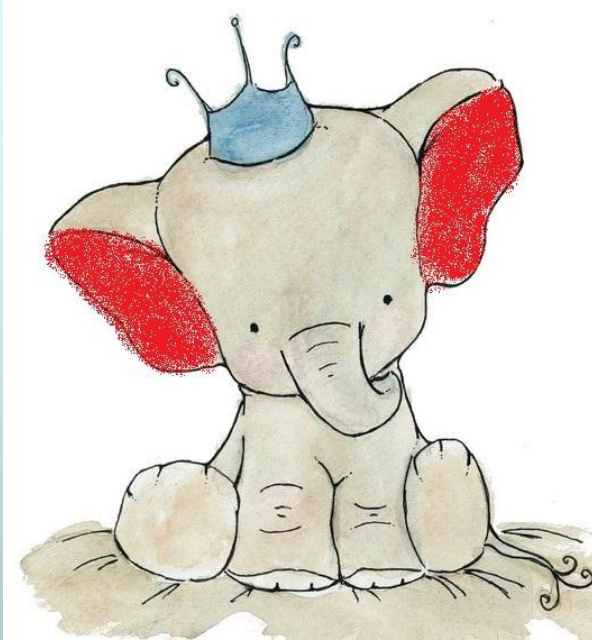To go to Music Mode, press my GREEN ear

To go to Game Mode, press my RED ear

To setup daily alarms, press my BLUE foot.

To test the alarm response, hit the 'A' key

Alarm Indication

Ellie's Interaction Tree

- ▣ Main Menu – Intro to toy
  - ■ → Music Mode
    - ▫ Choosing/Clicking/pressing any appendage will play a pre-programmed children's song (my favorite is the left ear or the Return to Pooh Corner)
  - ■ → Game Mode
    - ▫ Ideally, the child would have the option to choose a game to play.
    - ▫ Future games are typically limited by the number of inputs/outputs available for interaction.
  - ■ → Alarm Set Mode
    - ▫ At this stage, there are functional alarms hard coded into the program. Programmed alarms set off Ellie's ears to indicate a regularly scheduled event in the child's day
    - ▫ Future stages would include either a local or remote way to change and/or identify alarms of interest.
  - ■ → Secret Mode
    - ▫ "secret mode" is just a simple game that allows its users to click around and see a mini fireworks show for a little visual stimulation.