NFClock – Wake up with NFC

CISC 325: Human User Interaction – Professor James Rodger

Team 16: Amani Ibrahim, Adam Jones, Chris Keeler, Stefan Mooney-Fardella

Introduction

Motivation

- Heavy sleepers have trouble getting out of bed even if they have set an alarm
- Heavy sleepers sleep through their alarm because:
  - They turn it off, and accidentally fall back asleep
  - They become accustomed to the ringing and do not 'hear' it

Objective

- Build an alarm clock application that uses Near Field Communication (NFC) technology and 'alarm sets' to get heavy sleepers out of bed

Development Process: Phase 1

Overview

- Market Research to assess the application's viability
- Documentation of users' needs to determine required utility
- Construction of 2 primary users' personas to guide development
- Construction of a pre-prototype and usage scenarios

Market Viability

- 83% of millennial sleep with their phones within reach
- % use their smart phones as alarm clocks
- Out of 40 students asked, 37 said they would download the application

How to use NFClock

- Set a start time, end time, and interval for each *alarm set*
  - Start time: first alarm begins ringing; interval: how many minutes each alarm in the set will ring; end time: last alarm stops ringing
- Select a ringtone set (set of ringtones for an alarm set)
- Choose between *snooze mode* (user can pause current alarm) and *marathon mode* (user cannot snooze any alarms)
- To turn off an alarm set, user must tap phone against NFC chip (placed far from bed)


Pre-prototype: Empty home screen (left), setting a new alarm screen (middle), home screen with second alarm on (right)

Development Process: Phase 2

Overview

- Formalization of application's intended feature set
- Creation of hierarchical task inventories, storyboards, and wireframe prototypes are employed to organize development
- Basic functionality development of application in the Android Studio environment

Development Process: Phase 2 (cont'd)

Activity interaction Prototype

- From the home screen (top-left corner), users can create an alarm or go into settings.
- New features: Upon creating an alarm, users can choose the *silencing style* (*NFC tap* or *classic*) and if an alarm rings weekly

Development Process: Phase 3

Overview

- Thorough examination of the scope of issues in the application, determined by means of RITE UX and heuristic evaluations
- User feedback directs further design refinements and in application
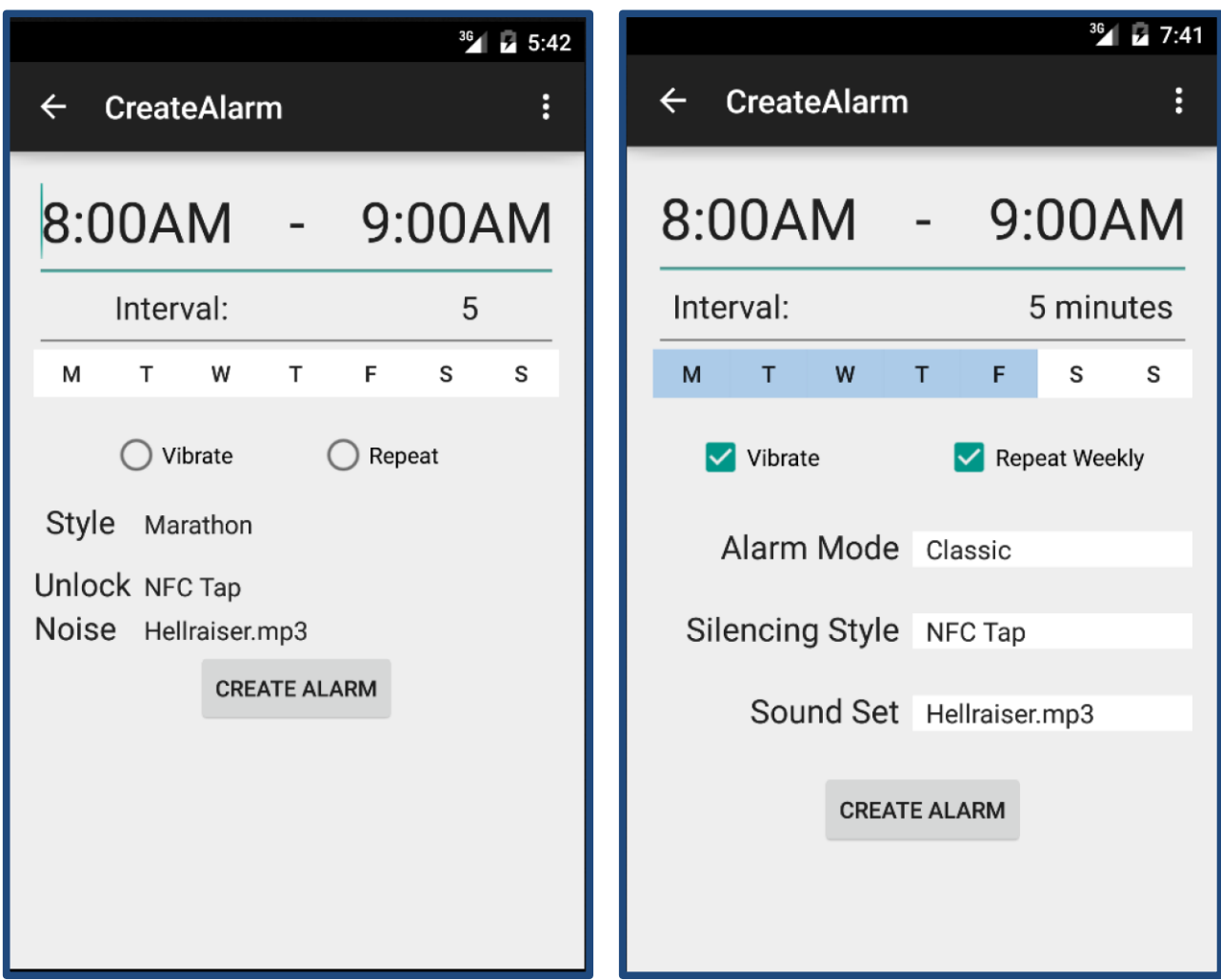
- NFClock before any user testing (left), NFClock refined after RITE UX and heuristic evaluations (right)
- New features: checkboxes instead or radio, clearer labels and colouring, and more even layout

Development Process: Phase 4

Overview

- Questionnaires are issued to participants to obtain data on user experience of application
- User feedback is used to implement last last cycle of design refinement
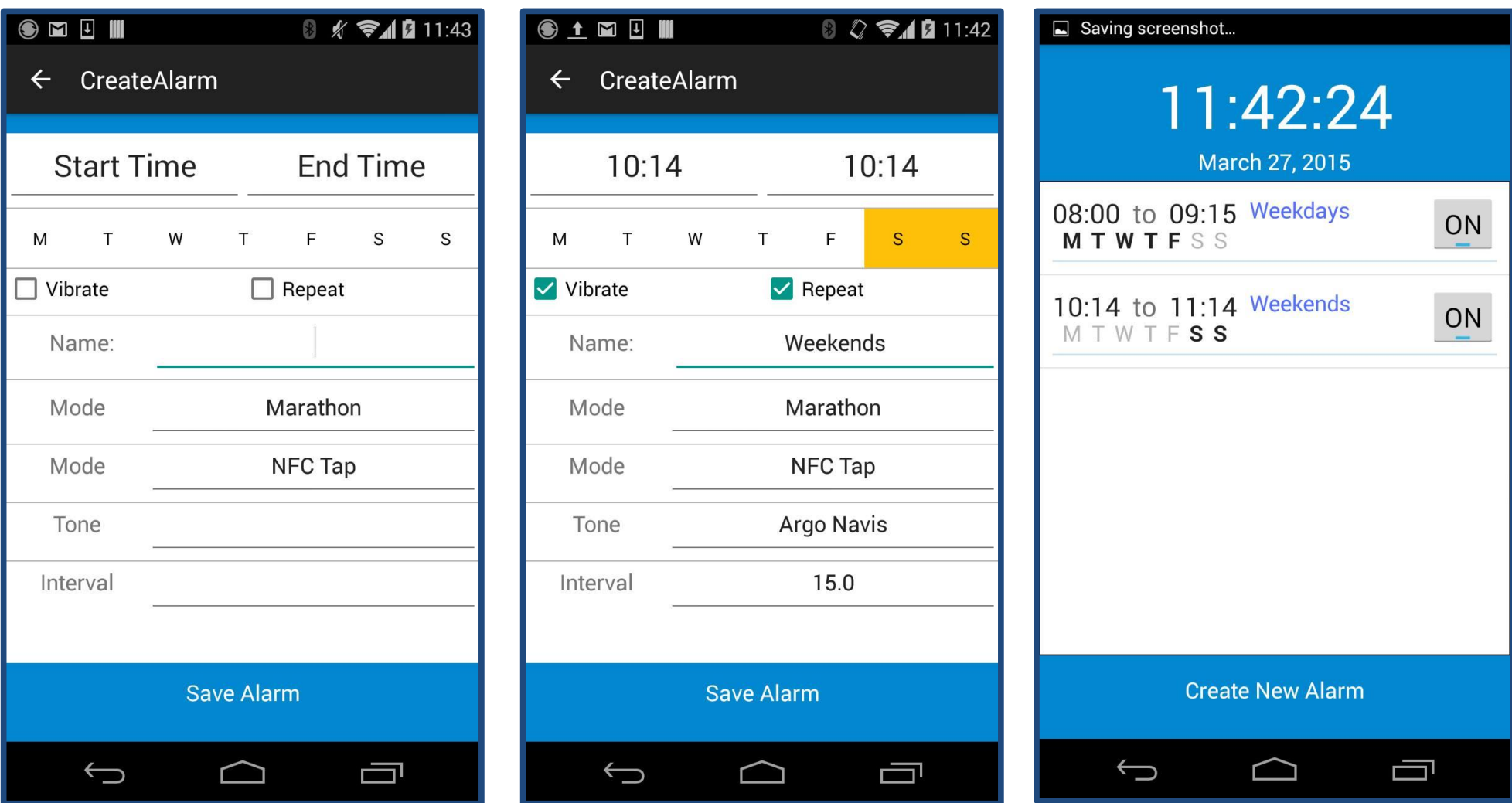
NFClock after receiving and implementing feedback from questionnaire
New features: More traditional label names, refined layout and colour-scheme

Future Directions

- Launch NFClock to the Android market (Play Store), and refine design and implementation based on real user usage of application