Project Plan

Group: Dec14-05

TV Remote Scheduling App. For Android™

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Version	Date	Author	Change
1.0	02/07/14	CLW	Initial Document
1.1	02/19/14	CLW	Compiling all individual contributions
2.0	04/02/14	BCT	Updating information and fixed format
2.1	04/06/14	CLW	Update formatting
3.0	04/28/14	BCT	Finalized Document

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1 Introduction

1.1 PROBLEM STATEMENT

Television remotes typically have between 30 – 50 buttons. Setting a television with these remotes is impossible to do for many elderly people. Television programming schedules are often difficult to read or comprehend by many elderly individuals even if they have the mental and physical capability to select channels with a TV remote.

There are some very simple TV remotes that are marketed to support the geriatric population but many elderly people even have difficulty using these and they lack the programmability required to set up a pre-determined program schedule throughout the day or the week. Many people in nursing homes spend much of their day watching television yet they have a difficult time selecting television programming that meets their interests.

1.2 SOLUTION

To create a television controller and interface that allows for weekly television programming selection. This controller will autonomously change the channel based on the information programmed. This device will be geared toward elderly, physically and/or mentally impaired individuals.

1.3 SCOPE

Create a prototype android application. This prototype should be able to change channels incrementally, turn the television on and off, as well as mute the television. The user will be able to add in their location(country and zip code), the television brand and type, as well as their cable provider and type of cable (digital or basic). After retrieving all the users information the user will be able to schedule a list of programs that they would like to watch. After a program has been scheduled the application will change the television 30 seconds prior to the program starting.

1.4 DEFINITIONS, ACRONYMNS, ABBREVIATIONS

Term	Description
STB	Set Top Box
USB	Universal Serial Bus

1.5 REFERENCES

Irdroid user manual:

http://www.irdroid.com/wpcontent/uploads/2011/10/Irdroid_Users_Manual_1.0.pdf

Nexus 7 user manual:

http://nexusmanual.com/
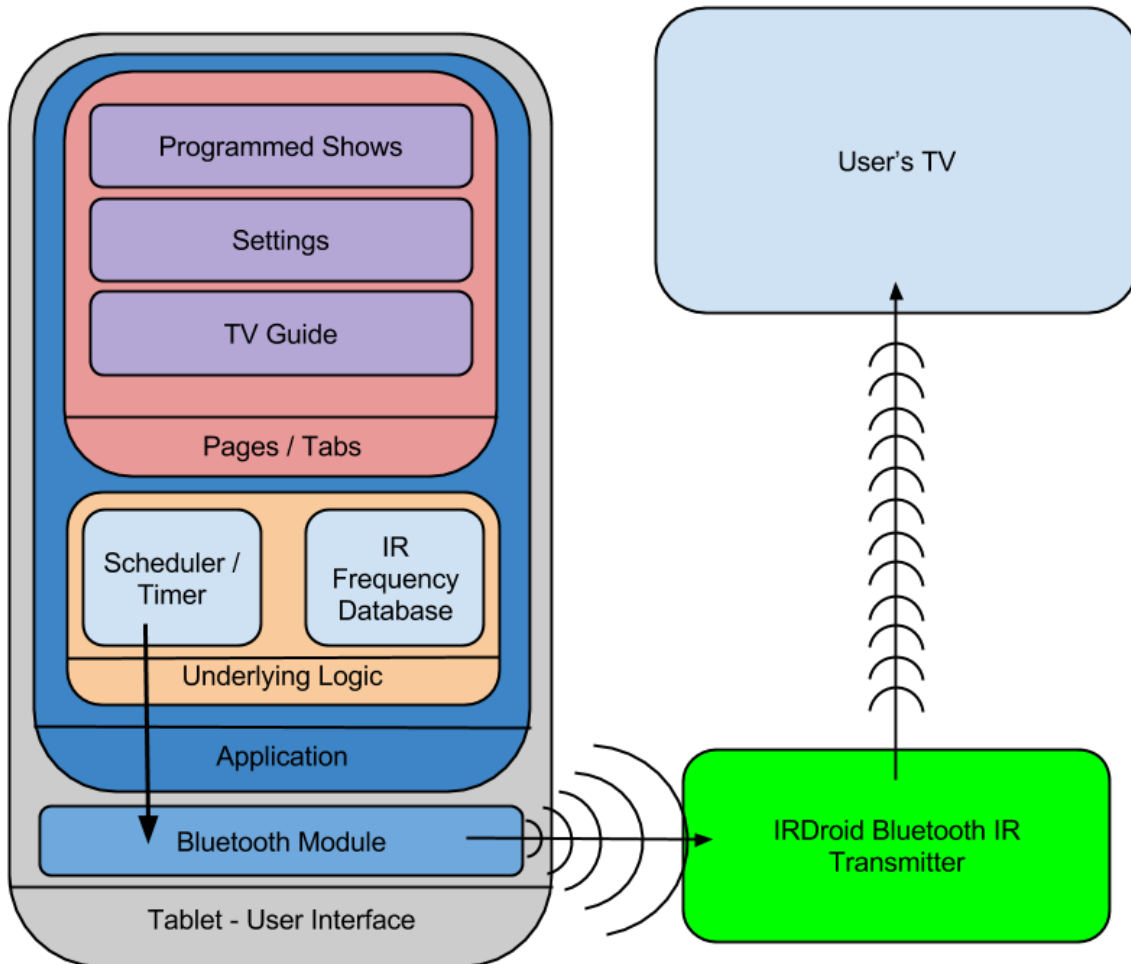
2   System Overview

Figure 1: System Block Diagram

2.1   SYSTEM DESCRIPTION

Our system is built around android development, and the open source device known as the IRDroid v2.0 Bluetooth IR transmitter. Our application will be run on an android device and contain two main components as shown in Figure 1. The graphical user interface composed of pages or tabs, and the underlying logic.

The Graphical user interface is split into three main pages, the Main page, which shows the user a basic remote to use on the TV, the Schedule page, which allows the user to see a list of the already scheduled programs, and the Settings page, which allows the user to setup their TV with the app, and sets up the service provider information.

The underlying logic portion is comprised of two main pieces, the scheduler, and the IR Frequency database. The scheduler is in charge of reading the users programmed shows and sending the correct signals to the Bluetooth device at the right time to change to channel. The frequency database contains all the controls signals for different brands of televisions.

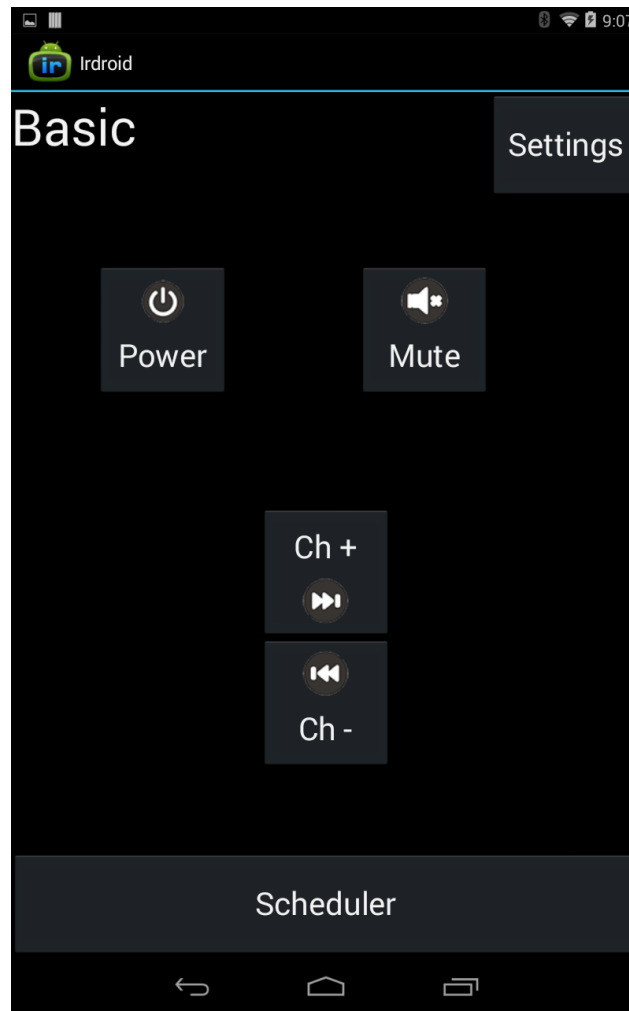## 2.1.1   User Interface

- App User Interface

Figure 2: Main Page

Main Page (Figure 2): This is the first page the user will see when opening the android application. This page allows the user to use the tablet as the simplest version of a basic remote and has buttons that take the user to the settings page or scheduling pages.

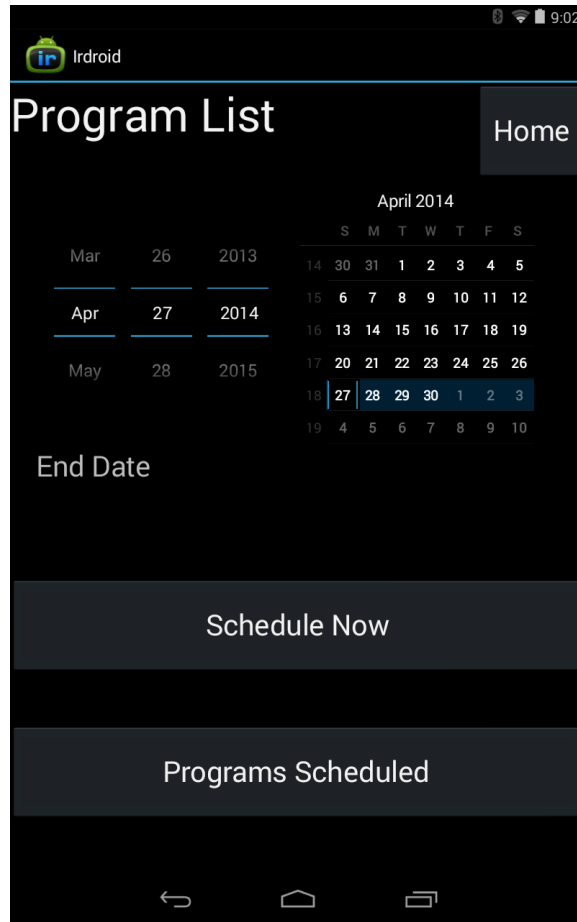**Figure 3: Schedule Page**

Schedule Page (Figure 3): This page will display current week of scheduling. The page has buttons that allow the user to select to see current schedule or navigate the user to the list serve pages to schedule a program.
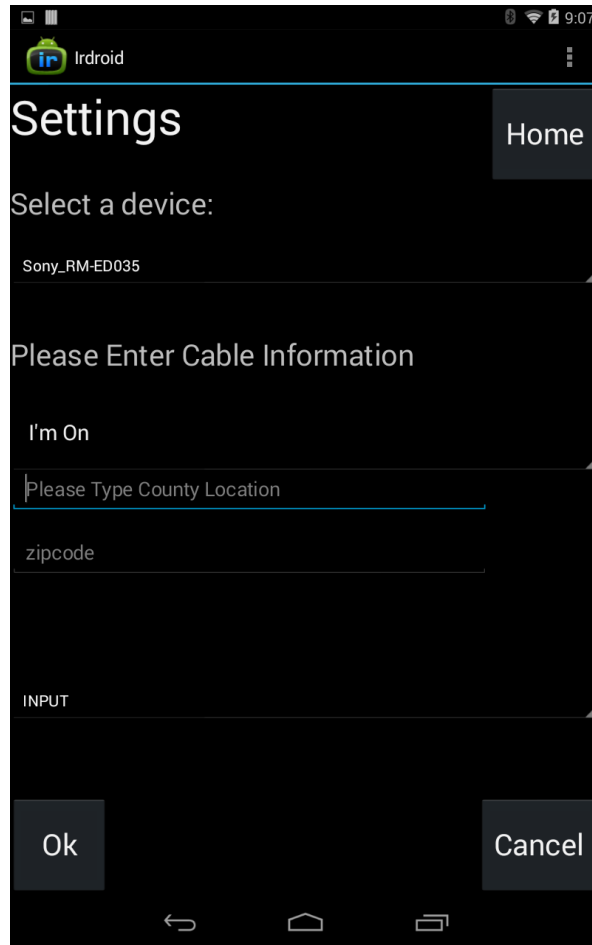
Figure 4: Settings Page

Settings Page (Figure 4): This page is used to setup and/or change the basic information the application needs to operate. The settings page will require information such as geographical area (zip code), TV brand, and cable package information.
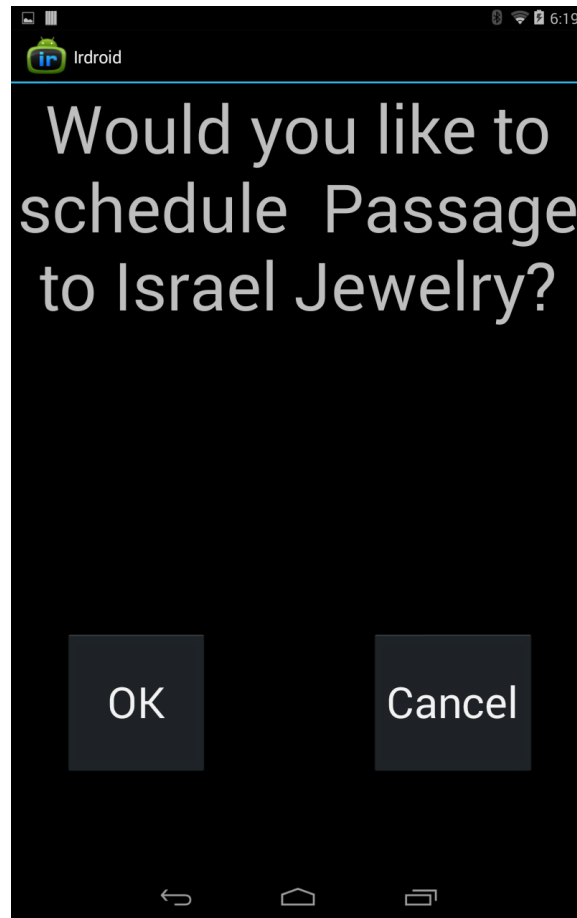
Figure 5: Checker Page

Checker Page (Figure 5): This page is used to confirm/deny that a change in the programming schedule is wanted. The dialog for the page reflects the program title to be scheduled.
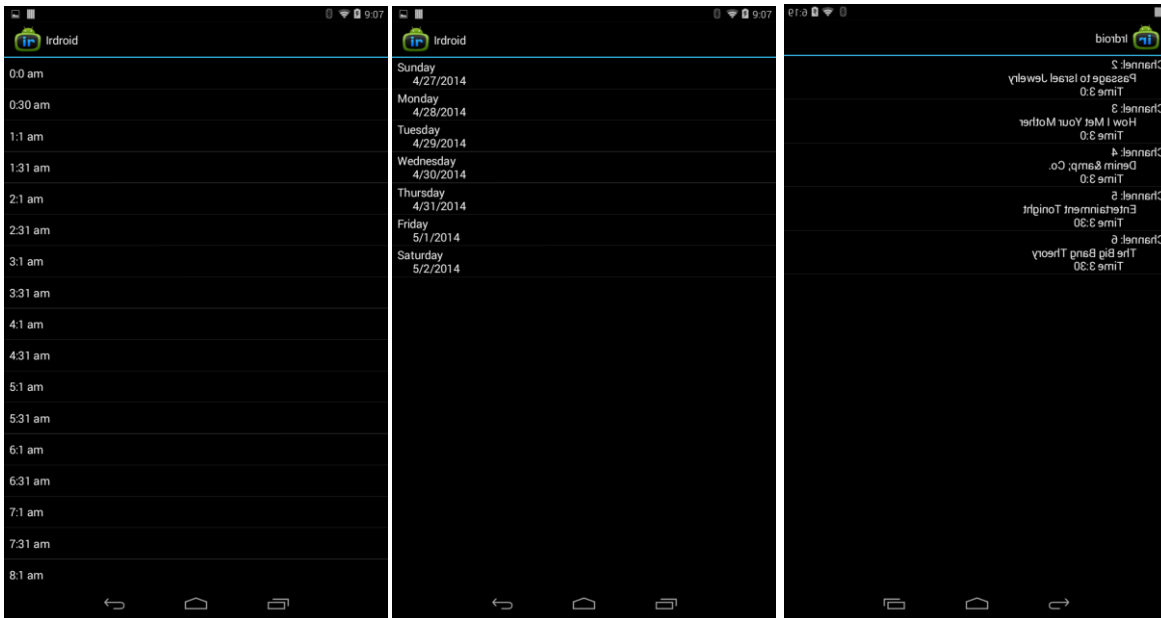
Figure 6: List Serve Page(s)

List Serve Pages (Figure 6): These pages will be used for the selection of programming to be added to the schedule. Selecting any item will bring the user into the next page. Selecting an item in the last window will bring the user to the checker page.

- Website User Interface

Figure 7: Web Main Page

Website Main Page (Figure 7): This page allows the user to navigate between the programs already scheduled and a TV guide.

TV SCHEDULER

List of Scheduled Programs
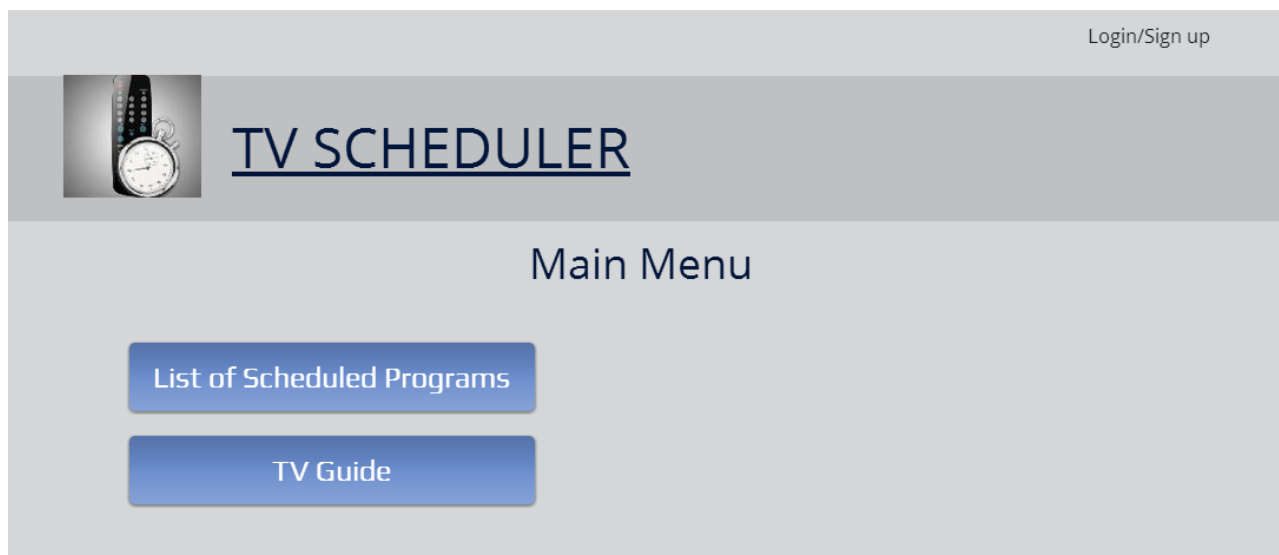
Day	Time	Program Name
Apr. 4, 2014	09:00 AM	Program A
Apr. 4, 2014	10:00 AM	Program B
Apr. 4, 2014	11:00 AM	Program C
Apr. 4, 2014	12:00 PM	Program D
Apr. 4, 2014	01:00 PM	Program E
Apr. 4, 2014	02:00 PM	Program F

Figure 8: Web List of Scheduled Programs Page

Web List of Scheduled Programs Page (Figure 8): This page allows the user to see a list of all programs already scheduled.

TV SCHEDULER

TV Guide

		8:00 AM	8:30 AM	9:00 AM	9:30 AM
TVGN	♡	Try Krill Omega FREE 8:00 AM - 8:30 AM	The Insider 8:30 AM - 9:00 AM	PopSugar Now 9:00 AM - 9:30 AM	The Insider 9:30 AM - 10:00 AM
ABC	♡	Good Morning America 7:00 AM - 9:00 AM NEW		Local Programming 9:00 AM - 10:00 AM	
CBS	♡	CBS This Morning 7:00 AM - 9:00 AM NEW		Local Programming 9:00 AM - 10:00 AM	
FOX	♡	Local Programming 6:00 AM - 12:00 PM			

Figure 9: Web TV Guide Page

Web TV Guide Page (Figure 9): This page allows the user to see a TV guide in order to assist with scheduling.

2.1.2   Functional Requirements

- Wireless Internet access
- TV guide or cable data must be able to parse through in order for the user to be able to selection a program to watch.
- Storage of user input must stay on the device until the user deletes it.
- Autonomously change channel
- Data must be available before channel programming can occur
- Limit access to authorized users

- Non Function Requirements

  - The hardware/software should change the channel fast.
  - The buttons/text should be large for ease of use.
  - The software should auto connect to hardware with Bluetooth.
  - The hardware/software should be able to run 24/7
  - The app should be able to automatically find the right TV code for the TV set up.
  - The software should pull up the correct TV guide based on area.

2.1.3   Hardware Interfaces

- Irdroid: A device that sends information through infrared and Bluetooth.
- Table: A compact computer with multiple sensors, a display, and single battery unit.

2.1.4   Software Interfaces

There will be an android application that to control the television and channel the channel when the scheduled program is within 30 seconds of starting. A website will complement application to allow remote assistance in configuring which shows will be watched when.

2.1.5   Memory Constraints

The amount of memory will vary from tablet to tablet. The main tablet being used to construct our nexus 7 tablet is 1 GB. We do not plan to get anywhere near this memory constraint.

2.2 USER CHARACTERISTICS

The typical user will be an elderly, disabled, and/or mentally impaired individual. Occasionally, this person will have assistance from a more skilled individual in order to program which programs they would like to watch throughout the week.

2.3 CONSTRAINTS

Internet: This software requires the user to have internet capability on a regular basis. Tablet Memory: The maximum amount of memory for the specific tablet we are using is 1 GB.

2.4 OPERATING ENVIORNMENTS

This product will be operating in a nursing homes lobbies and patient's personal rooms. The tablet will be mounted on the wall and the android will be inserted in the television USB port.

2.5 DEVLIBERABLES

Android application (Spring 2014)

- Design user interface
- That has the basic functionality of changing the channel.
- Parsing through TV guide
- Storing user selection from TV guide
- Organizing user input

Internet Site (Fall 2014)

- Changing the channel autonomously
- Design user interface
- Login authentication
- Parsed TV guide information
- Storing user input
- Sending information to android application

2.6 WORK PLAN

Resource requirements:

- Tablet
- Wireless internet
- Irdroid
- Television

2.7 TEST PLAN

2.7.1   Manual Testing

Manual testing is testing the user interface components by interacting with them and thoroughly noting the visual results.
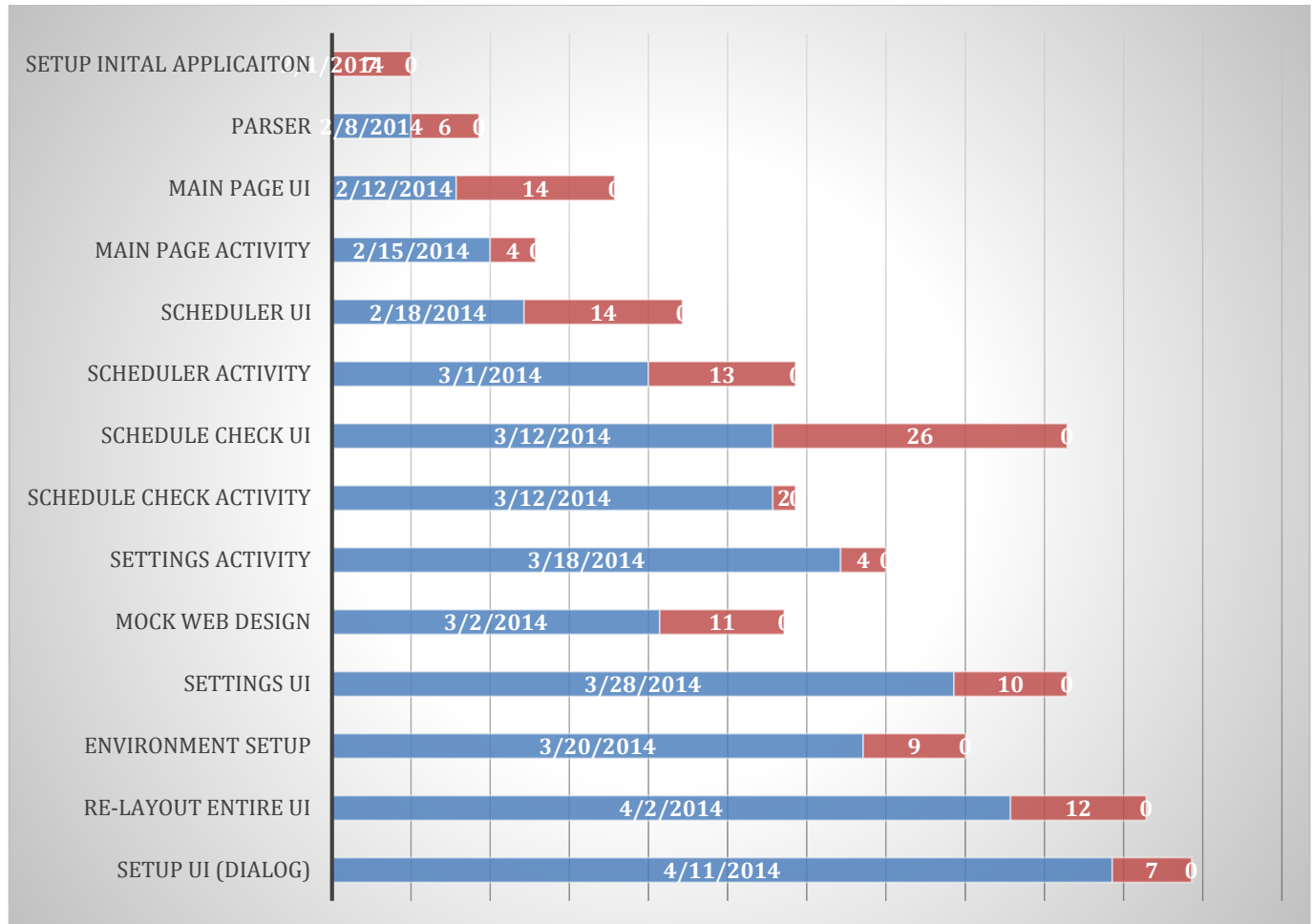
- Android application
- Website
- Server

2.7.2   Automated Testing

Automated testing is testing done automatically when the application is run.

- Android application
- Server Side Parser

Project Schedule (Spring 2014 ONLY)

Task	Date	Value
SETUP INITAL APPLICAITON	2/2014	0
PARSER	2/8/2014	6
MAIN PAGE UI	2/12/2014	14
MAIN PAGE ACTIVITY	2/15/2014	4
SCHEDULER UI	2/18/2014	14
SCHEDULER ACTIVITY	3/1/2014	13
SCHEDULE CHECK UI	3/12/2014	26
SCHEDULE CHECK ACTIVITY	3/12/2014	20
SETTINGS ACTIVITY	3/18/2014	4
MOCK WEB DESIGN	3/2/2014	11
SETTINGS UI	3/28/2014	10
ENVIRONMENT SETUP	3/20/2014	9
RE-LAYOUT ENTIRE UI	4/2/2014	12
SETUP UI (DIALOG)	4/11/2014	7

Risks

Not being able to have wireless internet access on a regular basis. This is needed for the application retrieve the most recent television guide. Being able to get the TV guide for various cable companies and/or being able to identify the cable box. Having the correct remote frequency for the TV. Being able to position the device in such a manner that it is able to change the TV without impeding the use of the original remote or blocking a walkway. This would prevent our entire project from working.

3   Conclusion

Our project will assist the elder, physically and/or mentally impaired individuals with being able to have the luxury of watching the television shows of their choice little to no assistance. The tablet will have our android application loaded on it. Someone assisting the elder, physically and/or mentally impaired individual will help them schedule their week worth of programs. This can be done using the device or using the website remotely. The application will then change the channel when a scheduled program is within 30 seconds of starting.