**Use Case UC1:** Initial User Setup

**Scope:** Fitbit Pentic System

**Level:** User Goal

**Primary Actor:** User

**Stakeholders and Interests:**

* User: Wants accurate data collection and calculation
* Company: Wants accurate data collection and User satisfaction

**Preconditions:**

Device is charged and has registered the first screen interaction from the User.

User is interacting with the device.

**Success Guarantee:** User’s height, age, weight, step goal, time display mode, and time zone are set in the devices memory.

**Main Success Scenario:**

1. User touches the screen with the watch on.
2. Device Wakes and enters initial setup mode.
3. Display prompts User to enter their age.
4. User enters their age and taps to confirm.
5. Processor sends age to Data System.
6. Data System stores age in an InitialValues file.
7. Display prompts User to enter their height.
8. User enters their height and taps to confirm.
9. Processor sends height to Data System.
10. Data System stores height in an InitialValues file.
11. Display prompts User to enter their weight.
12. User enters their weight and taps to confirm.
13. Processor sends weight to Data System.
14. Data System stores weight in an InitialValues file.
15. Display prompts User for a daily step goal.
16. User enters their desired daily step goal.
17. Processor sends daily step goal to Data System.
18. Data System stores the daily step goal in a Preferences file.
19. Display prompts User for time format option.
20. User selects 12h or 24h format and taps to confirm.
21. Processors send the appropriate signal to Data System.
22. Data System stores the time format in a Preferences file.
23. Display prompts User for their time zone as +/- UTC
24. User enters their time zone value and taps to confirm
25. Processor sends timezone to Data System.
26. Data System stores time zone in a Preferences file.
27. Processor refreshes the device with the new Preferences file.
28. Processor and Data System begin collecting sensor data and storing it for analysis.
29. Data System begins calibrating and running analysis of the data coming in.

**Extensions:**

1. The user enters an initial value incorrectly, ie. height, weight, or age
   1. User can wait for setup to restart after 5 minutes
   2. Or user can finish setup and then factory reset the device from the settings menu and redo setup
   3. Once the settings have been changed, the system refreshes the Display with the new settings
2. The user enters an initial preference incorrectly.
   1. User can wait for setup to restart after 5 minutes
   2. User can finish setup and then navigate to settings menu
   3. In settings menu, User can change this setting after initial setup
   4. When the user changes the setting, the system will refresh the Display with the new setting.
3. The device registers more than 5 minutes of inactivity
   1. The device goes to sleep
   2. When the User interacts with the device again, set-up begins again from the start
4. The device battery dies during setup
   1. The Display prompts User to charge the device
   2. Processor enters the device into Deep Sleep mode
   3. Once charged, interaction by the User wakes the device and setup restarts

**Use Case UC2:** Function as a Wrist Watch

**Scope:** Fitbit Pentic System

**Level:** User Goal

**Primary Actor:** User

**Stakeholders and Interests:**

* **User:** Wants quick access to the current time and date with minimal interaction from the user. Wants Alarm functionality that is easy and intuitive to setup.
* **Company:** Wants accurate time and date displayed with minimal power consumption. Wants Alarms to activate reliably in accordance with the specifications of the user.

**Preconditions:**

The device is charged and the time and date has been set.

**Success Guarantee (Postconditions):**

The user has been informed of the time and date as well as the alarms that have been set.

**Main Success Scenario:**

1. The user activates the display by tapping the Pentic face.
2. The device comes out of a low power state and the display shows the time and date as well as the alarms set.
3. The user is now aware of the time, date and alarms by reading the display.
4. The device returns to a low power state after a short period.

**Extensions:**

1. The user wants to view the time and date while viewing other information on the display.
   1. The user is currently viewing the amount of steps walked and is ignorant and curious of the time.
   2. The user swipes left or right until they reach the home screen where the time and date are displayed
   3. The user now knows the time and date by reading the display.
2. The user wants to set an alarm that will remind him or her of an event.
   1. The user navigates to the home screen.
   2. The user sets the desired time for the alarm to activate.
   3. The device’s alarm activates at the specified time and vibrates on the user’s wrist.
   4. The alarm will cease to vibrate once dismissed by the user or after a period of time.

**Use Case UC3:** Monitor and Track Health and Activity Data

**Scope:** Fitbit Pentic System

**Level:** User goal

**Primary Actor:** Display

**Stakeholders and Interests:**

* User: Wants accurate storage and analysis of the data as well as fast retrieval and display of the data. Wants data kept private and secure.
* Company: Wants to accurately monitor activity data and store it securely on the user’s device. Wants to ensure that the device tolerates gaps in the data when the user is not wearing the device or fit is not correct. Wants to ensure that the functions do not degrade battery life too severely.

**Preconditions:** The device is charged and the user is wearing it properly.

**Success Guarantee:** Each of the health and activity data fields have been correctly recorded and referenced for graphics. The user is able to view their data displays.

**Main Success Scenario:**

1. The device continuously receives data from the sensors.
2. The data is preprocessed in real time and the data points are stored in real time according to the sensor they came from.
3. The User wakes the screen.
4. The home screen is displayed
5. User swipes up or down to navigate to the screen for the desired data type: HR, steps, distance, Calories, or weight
6. Processor generates or retrieves the necessary graphs and pages
7. User swipes left, or right to navigate between data screens, first screen is current day’s data.
8. User swipes to navigate to other screens, screens display in order of increasing time period. ie. Today, Yesterday, 5 days
9. Screen sleeps after 1.5 minutes of inactivity

**Extensions:**

**\*a.** At any time, device battery reaches critical low:

To ensure continuity of the data points, ensure that all data storage operations are atomic. To prevent power loss, display warnings to user before critical lows are reached.

1. Device displays low battery screen and sleeps screen after 30 seconds.

2. Device stores current data points and state information to memory for restart

3. Device enters Deep Sleep mode.

**\*b.** Less than 5 days of data have been recorded

1. Processor retrieves as much data as it can
2. Processor generates graphs and pages, as specified, with the limited data.
   1. The graphs produced will simply be truncated in width but not scale

**Use Case UC4:** Distance and Calories Calculations

**Scope:** Fitbit Pentic System

**Level:** User goal

**Primary Actor:** User

**Stakeholders and Interests:**

* User: Wants correct calculation of the distance walked in a given time period and the number of calories burned in a given time period.
* Company: Wants accurate results from algorithms used in calculation.

**Preconditions:**

The device is being properly worn on the wrist.

Step count data has been received from the accelerometer, gyroscope, and step counter.

Heart Rate data has been received from the heart rate sensor.

**Success Guarantee:** The system will display an accurate number for the distance walked and calories burned based on step count and heart rate data.

**Main Success Scenario:**

1. User ensures the device is powered on
2. User properly affixes the device to their wrist
3. User begins period of physical activity
4. Data is properly collected from the device sensors.
5. User wakes the screen of the device
6. User navigates to the steps screen and sees accurate step number recorded
7. User navigates to the calorie screen and sees accurate calories burned

**Extensions:**

1. The user is biking or some other non-walking activity, ie. device registers no steps
   1. Heart rate data will be collected, but step data will not.
   2. Calorie calculations will switch to HR only mode.
2. Device is moved or shaken while not worn
3. Heart rate data is not being received.
4. Distance and calorie calculations should not be made.
5. Device reaches critical battery life
   1. Sensors disable to save battery
   2. Current distance and calorie data is saved
   3. User is notified to charge the device

