

# Marking guide

Note that this is a guide for what we were expecting in the assignment. A wide range of alternatives were accepted but the functionality must be covered and the alternatives must be sensible. Markers also looked for consistency between sections – eg if you collect particular data you should be planning to analyse and report it.

## Task One: Heuristic Evaluation Report

### 1. Investigate the functionality of the device.

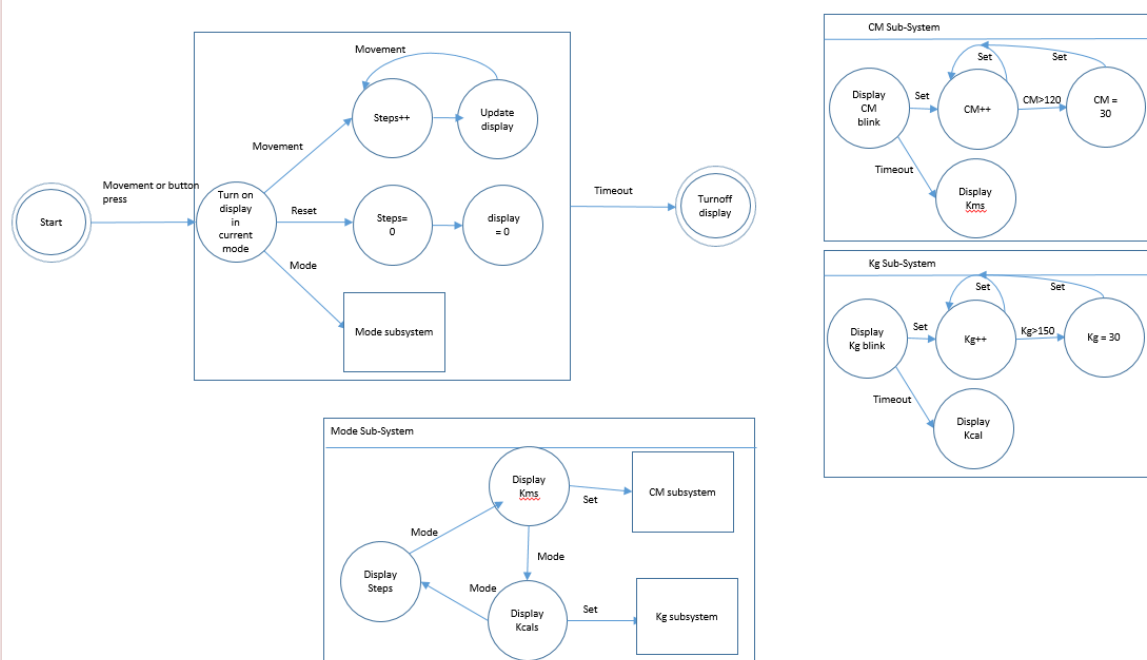
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- a. **Display turned on** – when a movement is detected or button pressed turn the display on
- b) **Count Steps** – each time a step movement is detected the counter is increased – and display updated. This can be the Step, Km or kcals depending on the current mode.
- c) **Reset** – when the Reset button is pressed the counter resets to 0 and display set to 0 (all modes)
- d) **The mode button cycles round the 3 mode displays** – Step, Km and kCal
  - a. Show KMs – when the mode button is pressed in Step the Kms are displayed
  - b. Show kCals – when the mode button is pressed in Kms, kCals are displayed
  - c. Show steps – when the mode button is pressed in kCals, Steps are displayed.
- e) **Change CM** - when the mode is on Kms the CM(*stride length*) can be changed by pressing the Set button. This value cycles from 30 – 120 increasing 1 for each press and returning to 30 after 120 – leaves mode and returns to Kms after a very short timeout.
- f) **Change Kg** – when the mode is on Kcal the Kg (*weight of person*) can be changed by pressing the Set button. This value cycles from 30- 150 increasing 1 for each press and returning to 30 after 150 – leaves mode and returns to kcal after very short timeout
- g) **Turn off display** – after a time of no activity, turn display off.

### 2. Model the interaction with a state transition network diagram.

This diagram could be drawn in many different ways. The markers were primarily looking for completeness, flow and abstraction.

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### 3. Summarize your heuristic evaluation using Nielsen's usability heuristics

2 marks for each well-identified heuristic, 1 mark for less important or doubtful heuristics. To obtain 10/10 you needed an excellent concise set of heuristics with good justifications. The list below is not exhaustive but indicative.

#### Visibility of System Status:

- An **arrow** points to the default display mode selected by the user. The names used on the display for the three display modes – Step, Kcal and Km are fairly intuitive and most users will be able to guess that they correspond to no. of steps walked, amount of calories burnt and the distance walked.
  - However, this arrow is pretty small and difficult to see sometimes, could have been bigger
- Clicking on the 'Set' button makes the arrow blink, thus indicating that the system is currently in the Set mode (of CM or Kg), which is a good indicator. However, this happens only when the button is pressed in Km or Kcal mode. If the user presses the Set button in the Step mode then nothing happens and might confuse the user as to whether the Set button works or not.
- Pressing the 'Reset' button for few seconds resets the counter of the three modes to zero and this is displayed in the respective display modes which is again a simplistic and good way to indicate that the counters have been reset.

### **Match between System and the Real World:**

- All the metric symbols have been wrongly printed. Kcal should be kcal, Km should be km, Kg should be kg and CM should be cm. However, all symbols are easily understandable because of the use of capital and small letters except CM.
- MODE, SET and RESET are similar to other devices so are easily understandable.
- All the status display modes (Steps, Kcal and Km) have names that can be intuitively understood. Same goes for the setting mode 'Kg' which indicates the user to enter their weight. Nonetheless, the setting mode 'CM' is difficult to understand spontaneously because a novice pedometer user at first wouldn't know what CM stands for. If in place of it 'Stride' was written it would have been more intuitive.

### **User Control and Freedom:**

- While in the setting modes (Kg and CM) there is only one way to change the values, that is by incrementing them by pressing the 'Set' button repeatedly but there is no way to decrement the value. Having a decrement feature would be great.

### **Consistency and Standards:**

- If the standard metric symbols would have been followed then there would be less confusion for CM.
- Strides should have been mentioned besides CM

### **Error Prevention:**

- The device doesn't have any indicator for low battery which may confuse the user whether the battery has drained out or something else is wrong with the device.
- The RESET button only functions when pressed for a few seconds hence reducing the risk for accidental reset.

### **Recognition rather than recall:**

- All the display modes and settings are based on recall but a recognition based display and menu might not be feasible for such a device.
- The settings function are not easily discovered and it takes time to find out how to set strides and body weight.
- The order in which the menu is printed indicates that pressing MODE will take us to each menu item printed one by one but it doesn't happen so and pressing MODE in STEP mode skips Kg and CM and goes directly to Kcal.

### **Flexibility and efficiency of use:**

- Not applicable for this device.

### **Aesthetic and minimalist design:**

- The device is already displaying information at a minimum level.

### **Help users recognize, diagnose, and recover from errors:**

- Not applicable for this device.

### Help and documentation:

- Not applicable.

## Task Two: Usability Test Plan

**Product under test:** pedometer as supplied

**Test Objectives:** the object of this test is to evaluate the usability of the pedometer. The device works at two levels, out of the box it is a simple step counter. However, it is also possible to customise the step length and users weight, therefore (presumably) varying the kms and kcals displayed

**Participants:** 10-12 participants will be recruited to participate in the study. There will be an equal balance of gender, age and tech savviness as per the table below. Tech Savvy will be self-rated.

	Gender	Age	Tech savvy
P1	F	20-40	Y
P2	F	20-40	N
P3	M	20-40	Y
P4	M	20-40	N
P5	F	40-60	Y
P6	F	40-60	N
P7	M	40-60	Y
P8	M	40-60	N
P9	F	>60	Y
P10	F	>60	N
P11	M	>60	Y
P12	M	>60	N

### Tasks:

1. Shake to light display
2. Walk a bit
3. Reset the step count
4. Understand the mode button
5. Change the Step length
6. Change the weight
7. Thanks, please do the questionnaire

### Questionnaire:

Gender F/M  
 Age 20-40, 40-60, >60  
 Tech Savvy Y/N

How easy was it to record your steps with the default setup?	Very Easy	Ok	Confusing	Difficult	Impossible
How easy was it to reset your step count?	Very Easy	Ok	Confusing	Difficult	Impossible
Describe what the mode button does					
How easy was it to change your step length?	Very Easy	Ok	Confusing	Difficult	Impossible
Describe how to change the step length					
How would you rate the basic operation?	Very Easy	Ok	Confusing	Difficult	Impossible
How would you rate the advanced operation? (change step length)	Very Easy	Ok	Confusing	Difficult	Impossible

### Data:

Participant demographics and opinion from the questionnaire.

For each task: Time and success

Facilitator observation (particularly level of frustration)

**Test Procedure:** describe the step-by-step instructions for running a test (imagine someone else will be running some of the tests for you).

1. Two people will be present for a test. One will be the facilitator and look after the participant. The other will be the observer and record timing data and other observations
2. Set the pedometer to step length 70cm and kg 70. Make sure the step counter is greater than zero.
3. Facilitator. Introduce yourself to the participant and describe the purpose of the task

- a. Script "Hi, I am xxx and this is yyy. We are testing the usability of these little pedometers. I am going to ask you to complete a couple of tasks with them. yyy is just going to take notes"
- b. First, see if you can turn the step counter on and tell us what it says.
  - i. Great.
  - ii. If you give it a bit of a shake or push a button it goes on.
- c. Now take a few steps and check the counter again
  - i. Great
- d. "Imagine it is a new day. Set your counter to zero"
  - i. Great
  - ii. "if you hold the reset button down for about 4 seconds
- e. "Fantastic. That's the default behaviour. But you might have noticed there are some other little things on the list on the right-hand-side. Take a few steps so it is greater than zero. What do you think those are? How can you display them?
  - i. Great you are right the mode button shows. Travel distance and Kcals burnt.
  - ii. Actually, they are "Travel distance and Kcals burnt"
- f. What do you think the other two are?
  - i. Great you are right the CM is the step length used to calculate the travel distance and Kgs the Kcals burnt.
  - ii. Actually, they are "CM is used to calculate the travel distance and Kgs the Kcals burnt"
- g. See if you can change the step length to 60
  - i. Fantastic
  - ii. Don't worry took me ages too. I will show you how it's done.
4. Could you do this really short questionnaire for us.
5. Thanks so much for your help

### Analysis:

First, I would put all the data into a spreadsheet like this

Participant	age	gender	savvy	Task1		Task 2		Questionnaire responses	Observations
				time	Success	...			

I would calculate mean and standard deviations on times. I would take a good look at them to see if there were any obvious patterns. It is unlikely that there will be any statistically significant results because there are so few participants. However, I expect to find a relationship between the time and completion data and questionnaire responses and our observations.

Compilation of video of user experiences.

**Results:** I summarize the results per task as factual data first by task.

Task 1: N people successfully completed the task taking an average of xx second. N people failed to complete the task, giving up after xx seconds. The comments were ... Our observations .....

I would then make some concluding remarks summarizing what I had found

Finally, the table prepared above would be in the appendix of the results.

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**Presentation – 1 mark deducted for each spelling/grammar error. Leaving name off was a common error. To get maximum marks your assignment must have been at publishable standard.**