



FLY ME TO
THE MOON

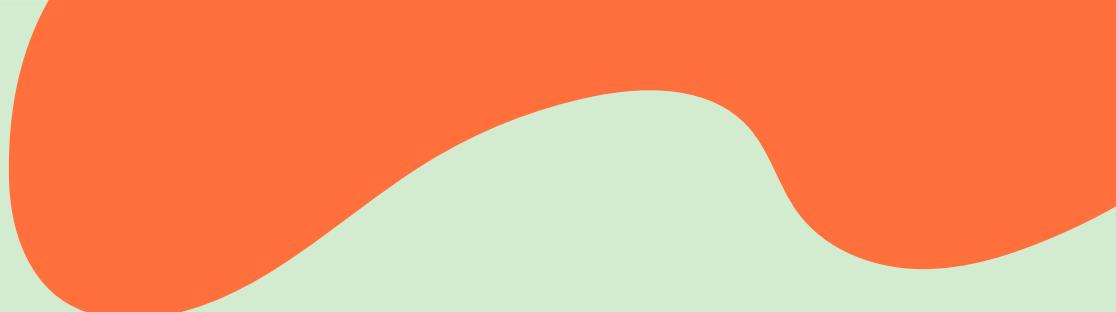
Make Things Interactive

Assignment 2: On the Move

Adrienn Krahl | S3964460

Content

Content	page 2
Project brief	page 3
Design:	
concept	page 4
description	page 5 - 6
variation	page 7
challenges	page 8
potential	page 9
Prototype	page 10
Circuit diagram	page 11
State diagram	page 12
Resources	page 13



Project brief

Chindōgu + travel"

"Chindōgu means unusual/rare/precious (珍, chin) tool (道具, dōgu). It originated from Japan, by an inventor by the name of Kenji Kawakami. Sometimes it is known by another term, while recognised as a different name in other parts of the world: *unuseless* inventions, weird tools, kludge, jugaad, Système D.

Despite the rather humorous approach to innovation, the practice of chindōgu can be seen as an exercise in creativity, unhindered by the penalty of impracticality. This impracticality might be physiological, ethical, cultural, social, oftentimes just simply too embarrassing to use. However, one can argue that chindōgu embraces a kind of hopeful, even childish optimism that any problem can be resolved, and the mistakes we make in such quick attempts are hopefully worthy lessons.

Given the pandemic across the world, borders have been closed for so long. Now that frontiers are again open, we are all itching to get back out into the world, near and far. This brief requires you to address travel, or (alternatively) lack thereof. Take into consideration the logistics, fears, needs of the traveller and use a "Chindogu" approach to create a whimsical 'travel' device.

Adopting the philosophy of Chindōgu, come up with an interactive contraption that supports, resolves, reflects or critiques on the various challenges associated with travel. Be as absurd and poetic, even nonsensical, as you want it to be, or if you wish, focus on the functional."



Image reference: © Kenji Kawakami Available at: <https://pen-online.com/design/chindogu-the-art-of-subverting-useful-objects/>, (Accessed on 6 Sep. 2022)

Design Concept

The idea for this project came from my love of travel. Although I love travelling, I don't enjoy quite as much the planning part. With so many travel destinations, ways to travel and things to do, one can spend hours or even days researching and booking a great trip. And it seems I am not alone with this struggle. Surveys suggest that people spend on average 10 hours planning their holidays and over 25 percent of people think holiday planning is one of the biggest stress factor.¹

An article even suggested that if people were spending as much time online dealing and organizing their finances as they spend researching their next holiday destination, they could make significant improvement in their finances.

Even though Chindogu must be almost completely useless, the invention itself still intends to resolve a real problem that people face on a day-to-day basis. Therefore, with a combination of travel concept and 10 tenets of Chindogu I wanted to explore the idea of making travel planning easier. Whilst people have the options to go and see a travel agent, who could help them plan their trips, many opt out due to a combination of factors such as perceived additional charges and higher cost, the inability to tailor these travel packages or having a too 'touristy' feel to these trips.²

This is where the idea of personal or pocket travel agent was born. What if you could have help at no additional cost, at any time of the day, and could ask for as many recommendations as you wanted. Of course, with the concept of Chindogu involved, many elements of the travel plan are humorous and almost surreal, like recommending travelling somewhere in an UFO or hot air balloon and leaving for the holiday immediately or even in the next 5 hours. I guess we could conclude that in true Chindogu spirit, one could almost see themselves using this device to plan their holiday.

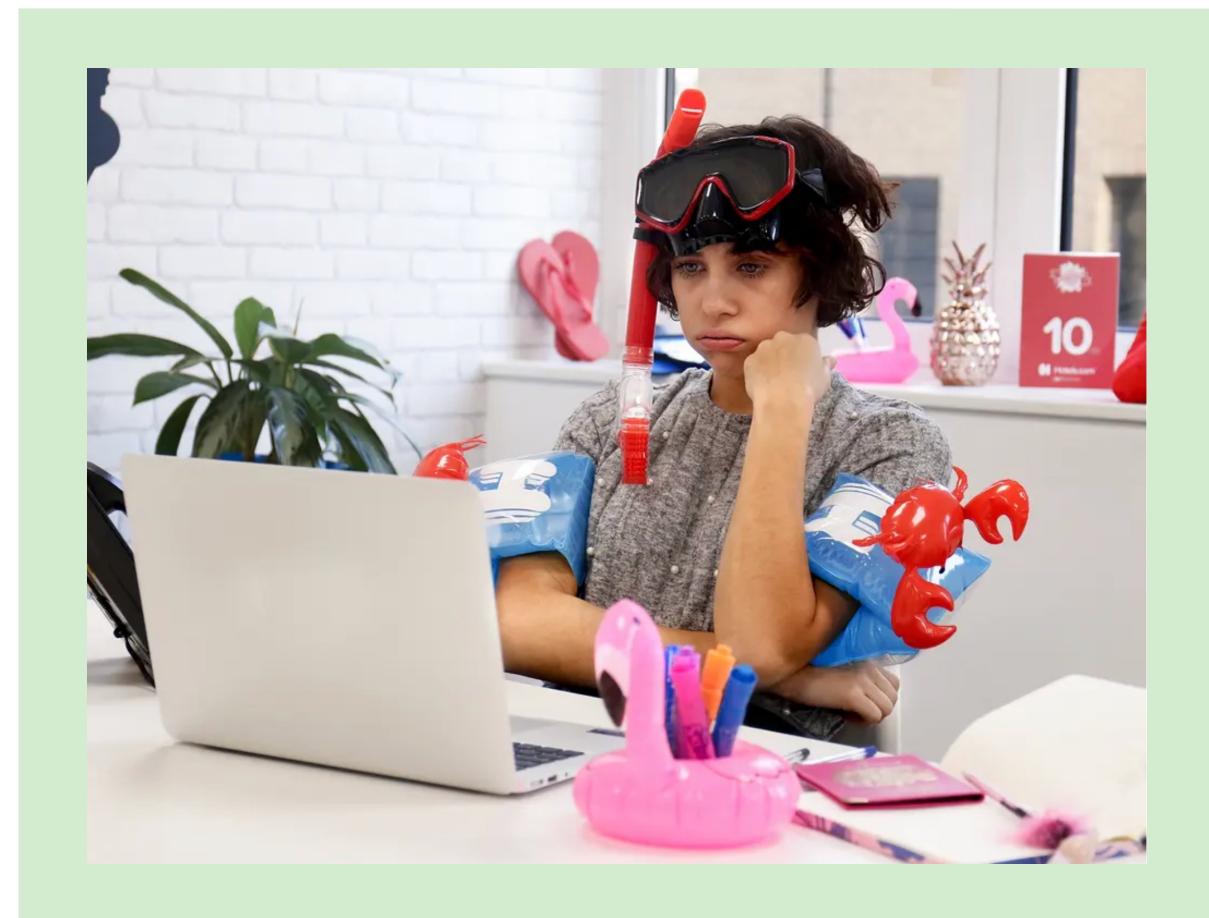


Image reference : "The average person typically starts to lose interest in planning a holiday 42 minutes into the process, according to the survey (SWNS)" Available at: at <https://www.independent.co.uk/travel/holiday-booking-planning-travel-survey-tourist-a8801211.html> (Accessed on 6. Sep. 2022)

Design description

The personal/pocket travel agent provides an interactive way to the user to receive travel plans and recommendations. It has two different inputs, which create three different outputs for the user; travel destination, departure time and mode of transportation, all of which are randomly generated by the program. One of the inputs, a Tri-Axis Digital Tilt Sensor is linked to a plastic Moon, with the association of 'Fly me to the Moon' aka finding the destination and departure time for the user, whilst the other input, a Switch Mercury Mini, is attached to a toy plane, indicating an output linked to the mode of transportation. At idle stage the LCS screen displays a message of 'Ask your travel agent'.

A Tri-Axis Digital Tilt sensor is attached to a plastic light up Moon which controls the LCD screen. The user first picks up the Moon and shakes it, which will initialize the accelerator. There is a threshold set to the accelerator value and upon this being met, the program randomly selects the travel destination and the departure time and displays this information for the user on the LCD screen. It is recommended that prior to each use, the initial accelerator values are checked whilst the Tri-Axis Digital Tilt sensor is in rest state (without being touched by the user) and the shake threshold value is accordingly set. Once this threshold is being met, the program will randomly select a travel destination and a departure time out of the multiple options embedded and set in the code.

An additional fun feature of the Moon is that upon each touch it will first light up in white color, then with the next touch it will change its color to orange, whilst an additional touch will turn its light off.

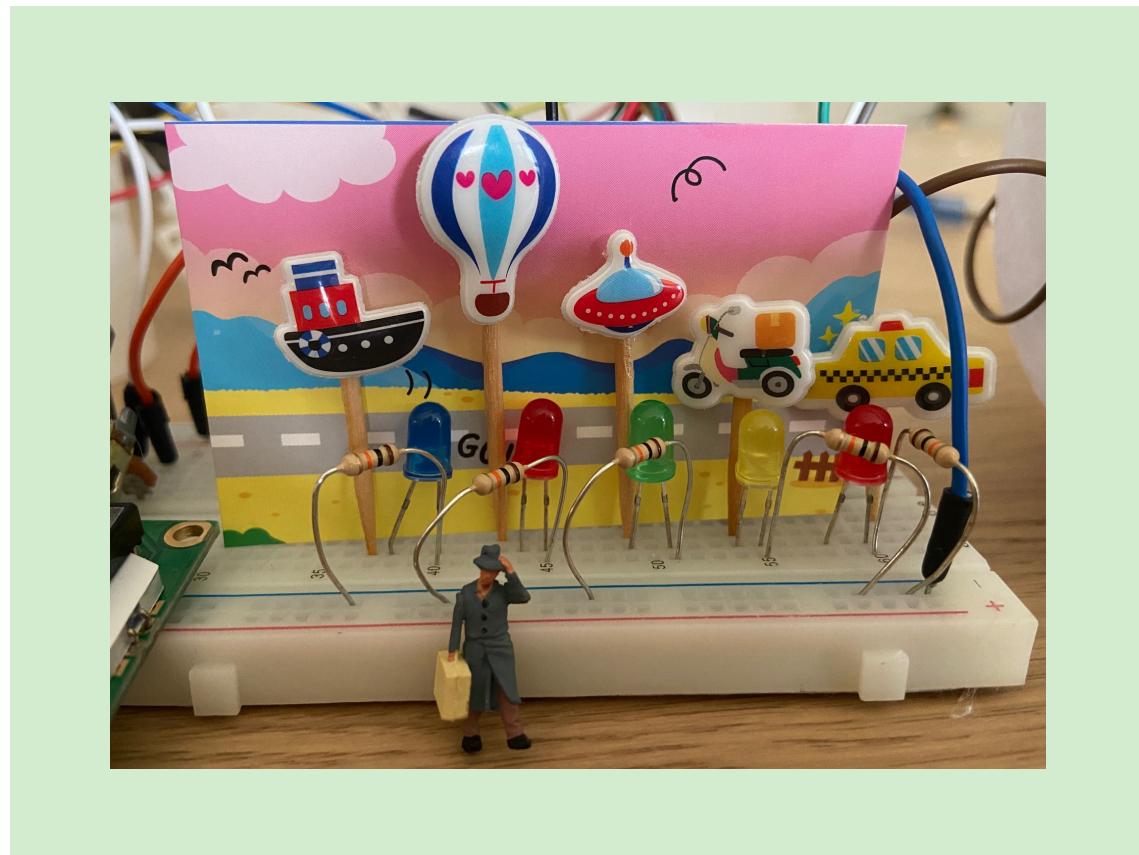
The options for the travel destinations and departure times are the following:

**"Havana,Cuba", "Alaska,USA", "Fiji Island",
"Antarctica", "Morocco,Marrakech", "Cape Town,ZA",
"Paris,France", "Edinburgh,Scotland",
"Dubrovnik,Croatia", "New Orleans,USA"**

**"Leave now ", "Leave tomorrow", "Leave @ midnight",
"Leave next week", "Leave @ dawn", "Leave @ dusk",
"Leave in 5 hours", "Leave @ midday", "Leave tmrw @
9am", "Leave on Monday"**

Design description

After the destination and departure time selection, the user picks up the plane and by imitating a flying movement, the switch mercury mini, which is attached to the plane, activates, in order to select their mode of transportation. The tilt sensor controls a set of LED lights, where each LED light is associated with a mode of transport, these being; **a boat, a hot air balloon, a UFO, a moped and a taxi**. With the Tilt state changed from Low to High, it activates the row of LED lights to come on. Whilst the sensor is in a tilted state the LED lights keep moving. As soon as there is no more tilt (the state is changed back from High to Low), the LED light movement stops, however with two built in delay steps; one would make the lights move at least 5 time before LED light actually stops, whilst the other randomly moves the lights 0 ~ 9 steps before stopping them.



Project video upload:
<https://youtu.be/poLgChBOzH8>

Design variation

My first prototype only included two outputs, the LED lights and one set of messages on the LCD screen. The original idea was that the user would only receive two components of their travel plan, namely the destination and the mode of transport. After our in-class discussion about my project progression, I really liked the feedback of including the departure times as well, as I felt it would add a lot to the project, especially to the Chindogu side of the design. A variation like this would allow for some additional humor and non-useful information to be added, like 'Leave now, or leave in 5 hours' departure times.

Therefore, I added an extra set of messages relating to departure times to the code and used the top row of the LCD screen to display random messages as a result of the shake threshold being met.



Prototype I. with only destination ideas being generated on the LCD screen



Prototype II. with departure times and destinations ideas appearing on the screen

As the project required two inputs and two outputs, I moved away from the original idea of one globe being shaken and included two input devices – A lighting up moon that was joined with a Tri-Axis Digital Tilt Sensor, representing the destinations and departure times, and an airplane joined with a switch mercury mini, representing and randomly selecting the transportation mode.



Original design idea

Design challenges

Challenge 1

Including a potentiometer on the breadboard by connecting one end pin to the power, the other to the ground and the center pin to the Vo of the LCD screen allowed for adjusting the contrast of the LCD display. This was extremely helpful and necessary as after uploading the code onto the Arduino board I switched the power source from my laptop to a 9V battery, which required different display setting on the LCD screen. Without a potentiometer, I would not have been able to read the messages on the screen when swapping from one power source to the other.

Challenge 2

Originally, I also wanted to use the LCD screen for the transport mode display – but this, I changed later to destinations, as I found that due to limited space on the Arduino board, I could only include 5 LED lights in total, which would have meant a very limited option of travel destinations. However, 5 different modes of transport still seemed acceptable.

Challenge 3

The original idea I had included only one device, a globe, which after being shaken by the user would have selected a destination by randomly lighting an LED light on the globe, which would have been associated with a city on the map. The idea came from the roulette game project I found on the internet however, the coding for this project included many elements regarding game difficulty level setting, which I could not use. Therefore, the random selection of the LED lights was achieved by building in some additional delay steps and random steps after the Tilt state changes from HIGH to LOW commanding the LED light movements to stop.

Challenge 4

The LCD screen also only allows for 16 characters to be displayed in each row, therefore unless a rolling message is being created, only information up to 16 characters per row can be displayed at a time. This resulted in certain destinations not being fully displayed (missing a few letters) and called for the need of certain abbreviations like at being substituted for '@'.

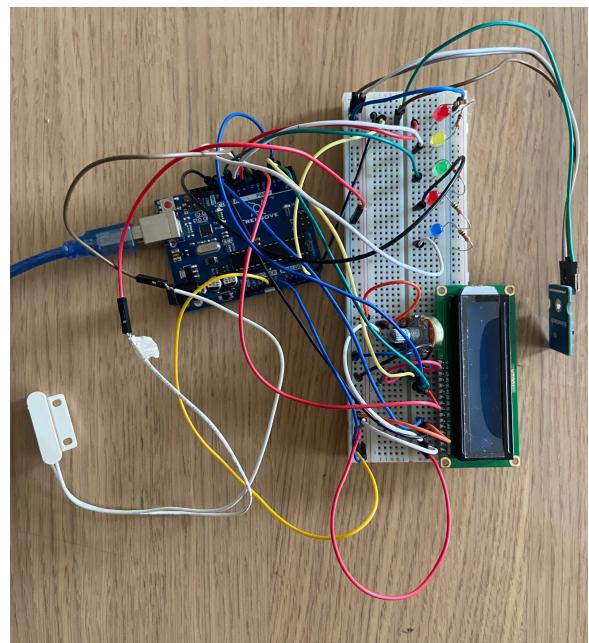
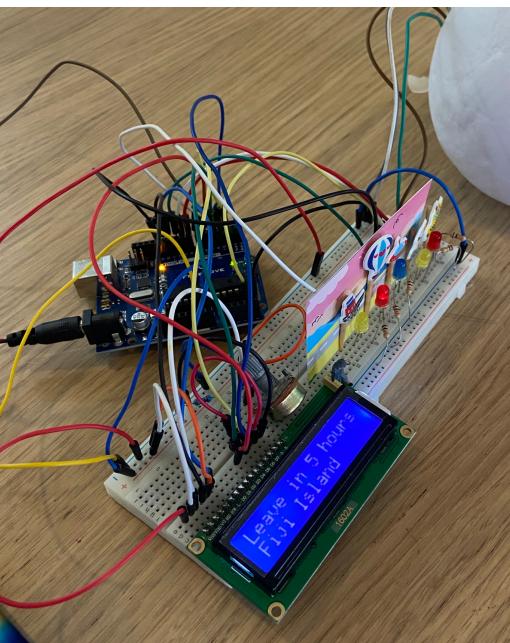
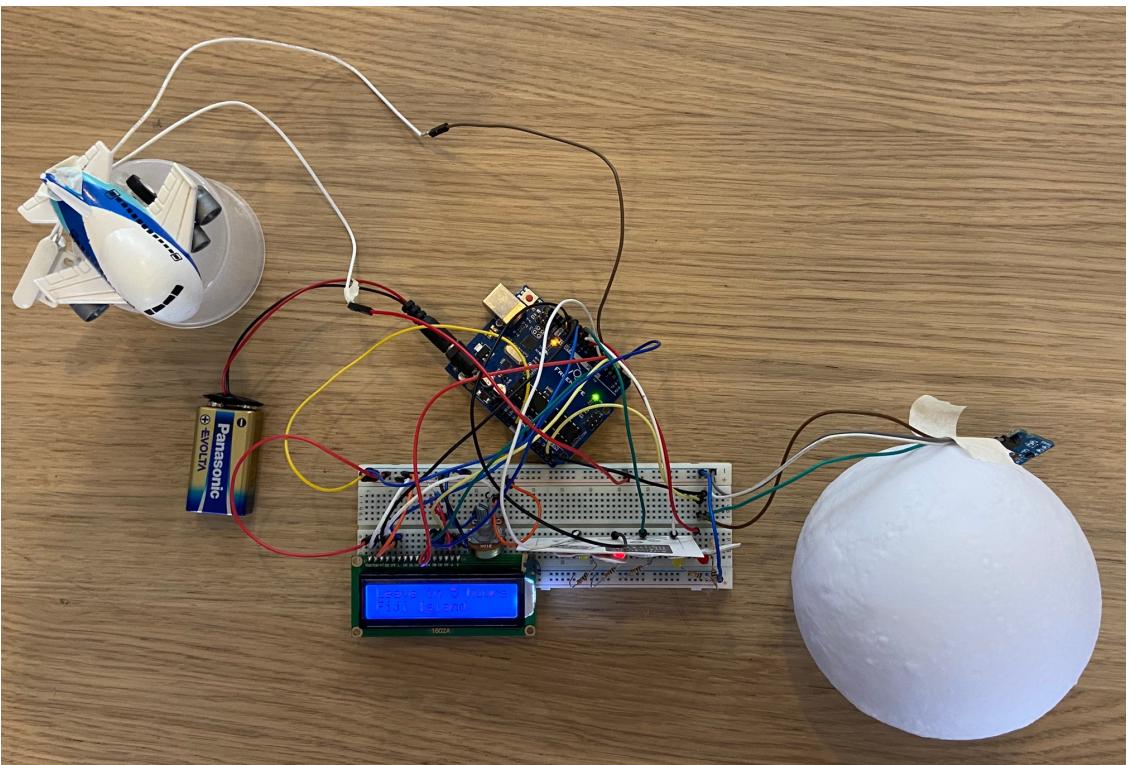
Design potential

Creating a time log to print the relative time (current time – start time) together with the tilt sensor value and Accelerator value allowed for easier interpretation of what the code does, how random messages are generated or what random delay steps are produced. I could also see more clearly if there were any issues with the sensors, such as negative values being read and therefore the LCD screen not displaying random messages, certain messages being selected more often than others or the tilt sensor not responding to movement. The log also allowed for the threshold to be set for the shake value after reading a set of initial values. In this set up the logging of time could have a future implication in the design as it can give us an indication of how long it takes of each user to find a recommendation of destination, departure time and mode of transport that they would be happy with. Basically, how picky each user is and how happy they are with randomly generated ideas – are they immediately happy to accept recommendations or they are less adventurous and like to 'shop around' a bit more before committing to a travel plan.

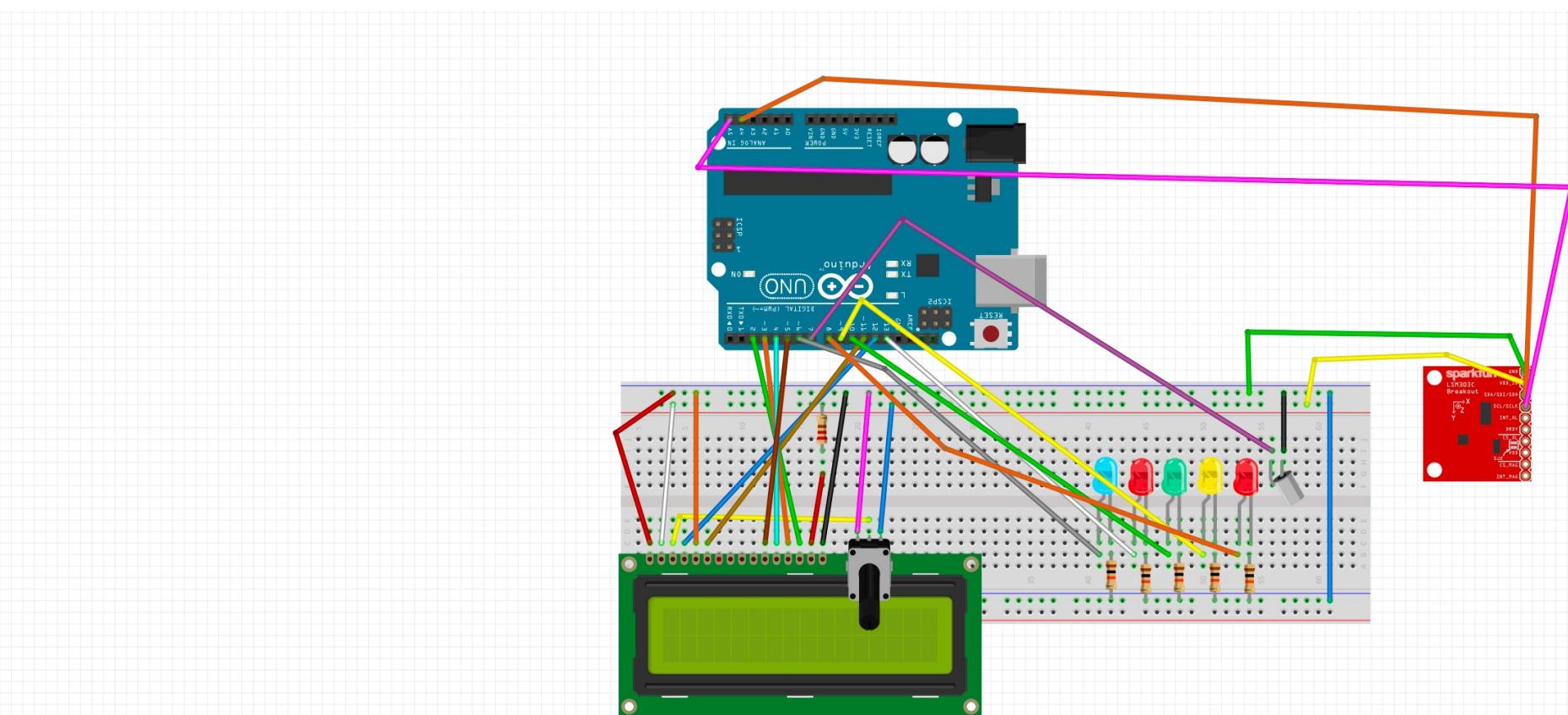
```
00:00:17 Tilt state: 0
00:00:17 Accelerator value: 1114
00:00:17 LCD message: Leave tomorrow Fiji Island
00:00:17 Tilt state: 1
00:00:18 Accelerator value: 1114
00:00:18 LCD message: Leave tomorrow Alaska,USA
00:00:18 Tilt state: 0
00:00:18 LED index stop in step: 14
00:00:18 LED index: 3
00:00:19 Accelerator value: 1114
00:00:19 LCD message: Leave @ dawn New Orleans,USA
00:00:19 Tilt state: 0
00:00:19 Accelerator value: 1115
00:00:19 LCD message: Leave @ dusk Antarctica
00:00:19 Tilt state: 0
```

Screenshot of the log printing relative time, tilt state, accelerator value and random departure times and destinations

Prototype



Circuit diagram



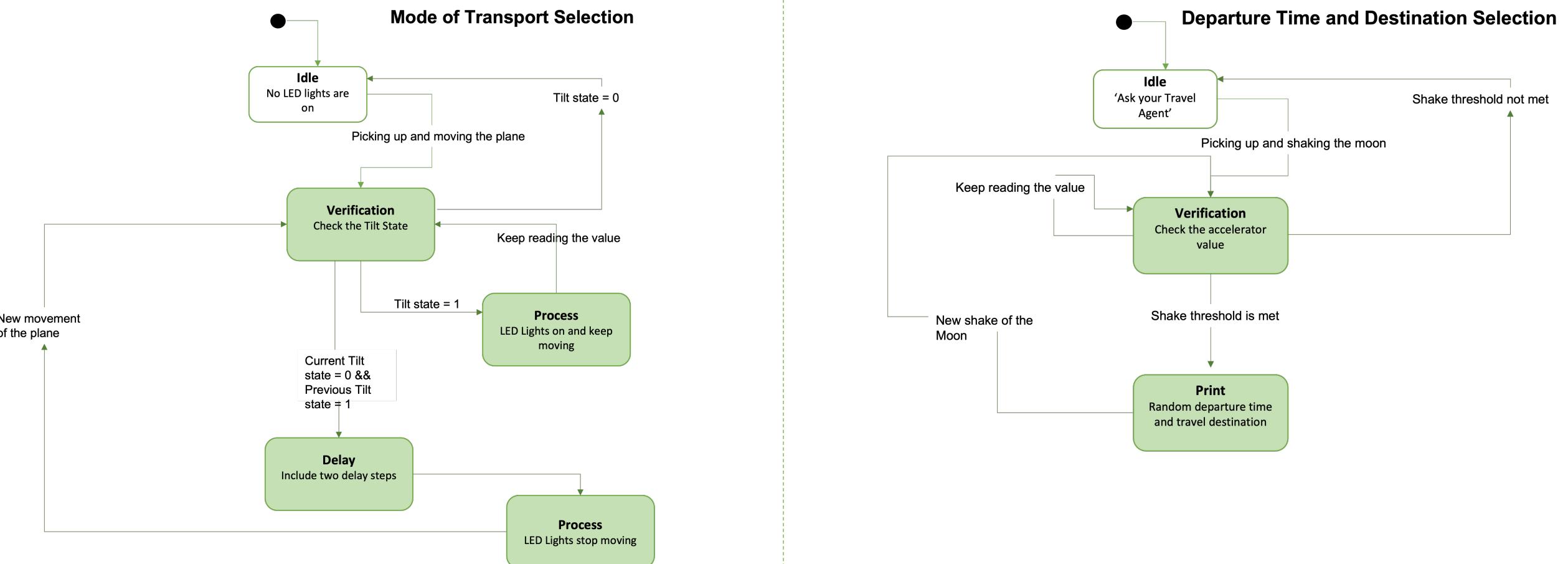
Note

As I could not find a tri-axis digital sensor in fritzing, which I used in my prototype , I used a Sparkfun LSM303C component as a substitute – this was connected as follows:
GDN to Ground
VDD to Power
SDA to A4
SCL to A5

Tri axis Digital Tilt Sensor
In real project attached as follows:
GND to Ground
VCC to Power
SDA to A4
SCL to A5

fritzing

State diagram



Resources

Reading list:

(2021.) 'Meet Marina Fujiwara | Inventor' Available at <https://shoutoutla.com/meet-marina-fujiwara-inventor/>, (Accessed on 20. Aug. 2022.)

Editors, M., (2019). 'How much planning time do you really need for your vacation?' , Available at <https://www.mic.com/articles/192764/how-long-should-vacation-planning-take> (Accessed on 6. Sep. 2022)

Fitzgerald, S and Shiloh M., (2012). ' Project 11: Crystal Ball' in the *Arduino Projects book*, Edition – 1, Italy, Page 114-122

<https://forum.arduino.cc/t/possible-to-print-millis-in-hh-mm-ss-format/45402/13>
(Accessed on 30. Aug. 2022)

'International Chindogu Society' Available at <http://chindogu.com/ics/> (Accessed on 1. Sep.2022)

'LED Roulette Game' Available at https://create.arduino.cc/projecthub/gatoninja236/led-roulette-game-85ae3c?ref=tag&ref_id=fun&offset=11 , (Accessed on 25. Aug. 2022.)

Richey, M., (2016). 'Chindogu: The unuseless inventions of Kenji Kawakami' Available at <https://www.tofugu.com/japan/chindogu-japanese-inventions/> (Accessed on 25. Aug. 2022.)

Ryoko, (2008). 'Chindogu: Form or Function?' Available at:
<https://web.archive.org/web/20160114224415/http://pingmag.jp/2008/01/11/chindogu/>
(Accessed on 6. Sep.)

'Shake the present' Available at <https://www.jaycar.com.au/gift-guessing-game> , (Accessed on 30. Aug. 2022.)

Simone Giertz Instagram Available at <https://www.instagram.com/simonegiertz/?hl=en> , (Accessed on 20. Aug. 2022.)

Venema, v., (2015). 'How the selfie stick was invented twice' Available at <https://www.bbc.com/news/magazine-32336808> , (Accessed on 6 Sep. 2022.)