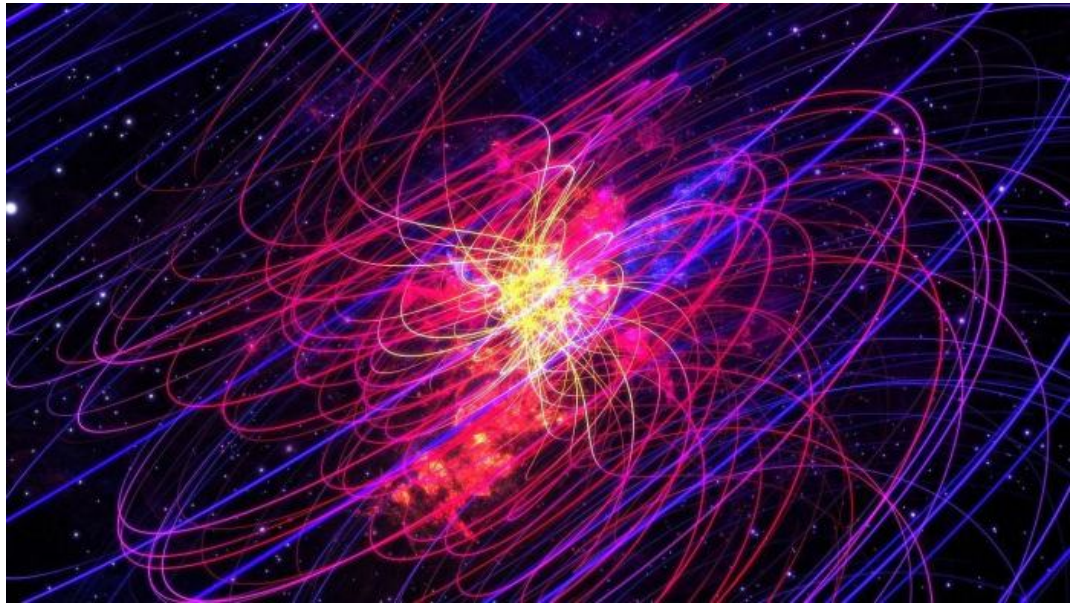
QUARKS

QUARKS

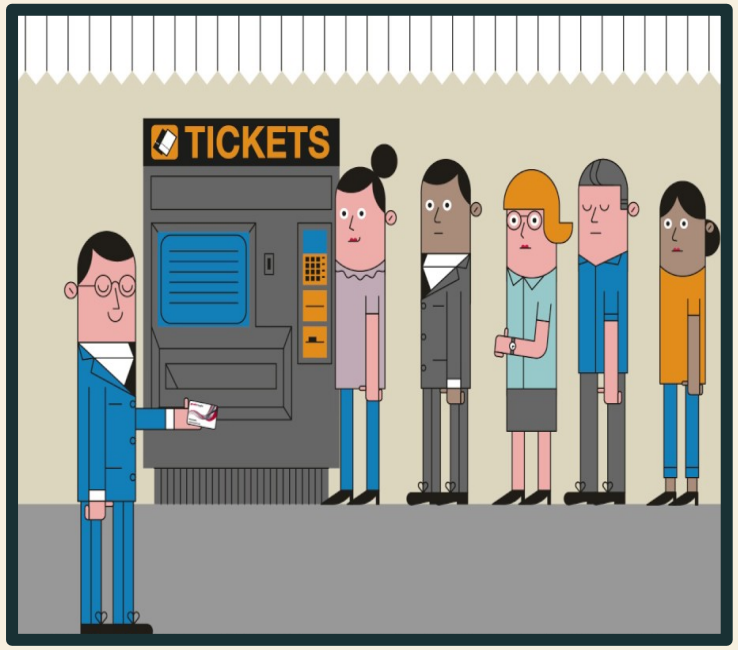
- Quarks is the smallest particle mankind has come across. Like a quark, the team wanted the idea to be used at the most micro level , for the better good of the macro-environment.



CARD MACHINE

WHAT ARE WE MAKING?

- A machine which will accept unused advertisement cards found on roads and cars.
- This machine opens with a login ID the pre-registered user.
- The users contributes by the disposal of all the cards collected by them.
- Based on the number and type of cards inputted by them they will be awarded with points that can be redeemed at any point.

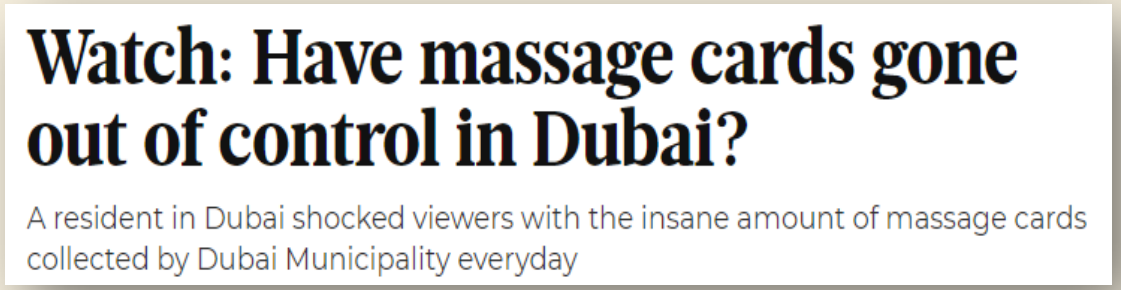


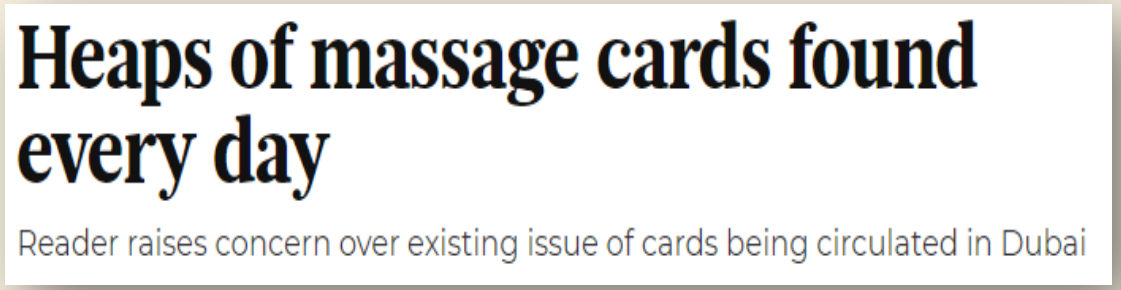
WHY THE TEAM DECIDED ON GOING FORWARD WITH THIS PROJECT?

- Today, as we step into few major sectors in Dubai, we come across a lot of advertisement cards, many of which are fake and promote illegal activities.
- Dubai is one of the top cities on the world tourism list, The government can't afford to have such advertisement cards on the street, these cards bring shame to dubai tourism and lifestyle in those communities.
- Video: https://www.youtube.com/watch?v=EoBX8XfjuLI

THIS ISSUE HAS BEEN ADDRESSED BY MAJOR FIRMS IN THE UAE :

- Gulf News:





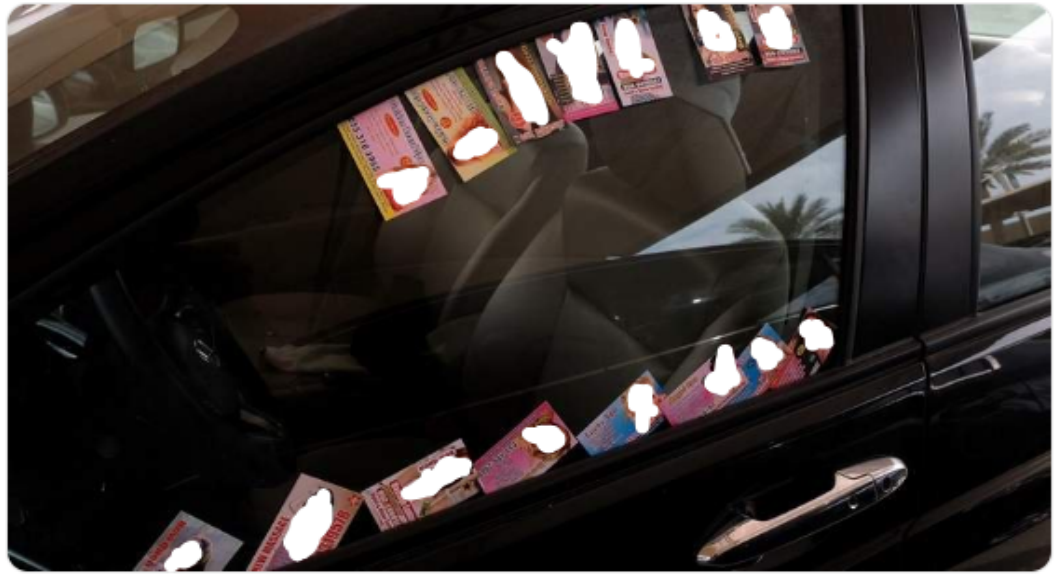
- Khaleej times:

KT for good: Don't leave massage cards on the streets in Dubai

Khaleej Times
@khaleejtimes

Follow

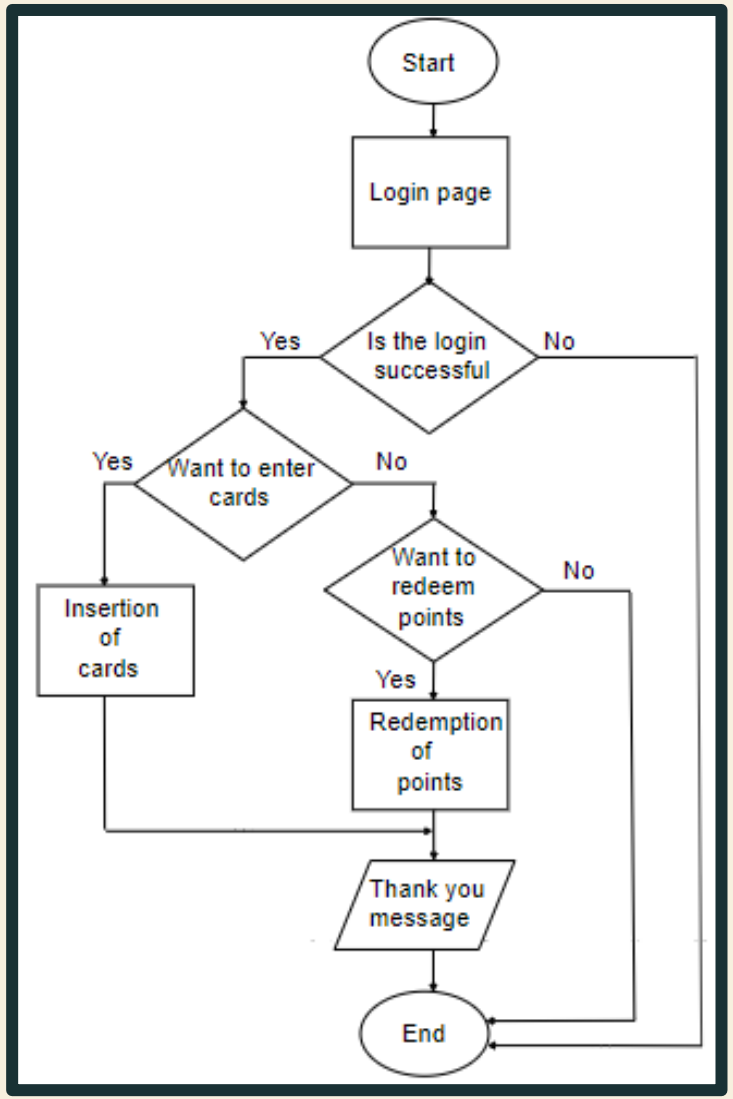
Massage card menace is more than just a moral problem in Dubai
bit.ly/2N87Y8j



7:25 PM - 15 Feb 2019

- The team choose this project trying to come up with a solution to make Dubai streets cleaner but also to look into the business perspective of it .
- The material used for making these advertisement cards is called CARDSTOCK. This material due to its brightness, color, durability, and thickness is quite expensive.
- The project can convert this problem faced by society in a major business plan that will lead to the production of cardstock at a cheaper price.
- There will be no worry of even having to pay for the machine to work as we would have solar panels attached to the machines in a similar manner as we see in parking ticket machines.
- The money earned from this can be given back to people as a reward for the effort taken by the people. Based on the user's contribution, the user benefits by getting points which inturn can be used to redeem dewa discounts.

FLOWCHART



STATES

There are 4 states in which this machine is present:

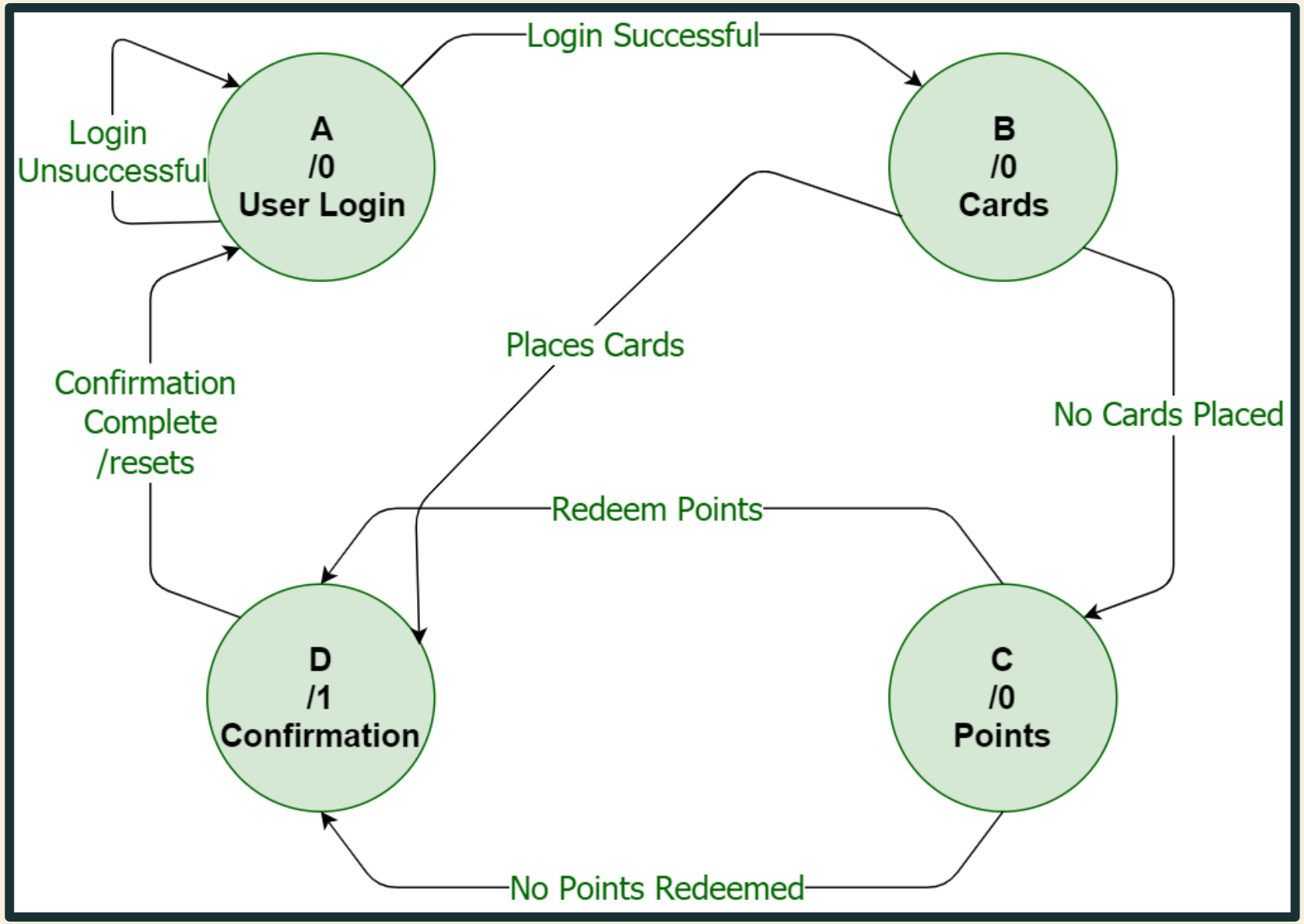
1. Login page where the user is asked for the username and password.
2. The page which asks whether the user wants to insert the cards or not.
3. The page that asks whether the user wants to redeem their points or not.
4. The page that displays a thank you message for the contribution done by the user.

WORKING OF THE MACHINE

- The first page which a user will encounter will be the login page where the user will be asked for his/her username and password.
- If the username and password turn out to be true then they proceed further or else they return back to the login page (first page).
- Once the user has successfully entered their username and password they are asked if they would like to insert their cards or not.
- If the user says yes they proceed with inserting the cards and then they proceed to the page where they are thanked for their contribution.
- If the user says no then they are asked if they would like to redeem their points.
- If the user says yes then they proceed with redeeming their points and then they proceed to the page where they are thanked for their contribution or else they exit.

STATE MACHINE

STATE MACHINE DIAGRAM FOR CARD MACHINE



STATE ASSIGNMENT FOR CARD MACHINE

States:
A = 00
B = 01
C = 10
D = 11

Inputs:
X = user inputs cards/receive points.
When X = 0, no cards entered/points received.
When X = 1, cards entered/ points received successfully.

Output:
Y = Process Completed

Transition Equations:

$Q_1^* = Q_1 \cdot \bar{Q}_0 + \bar{Q}_1 \cdot Q_0$

$Q_0^* = Q_1 \cdot \bar{Q}_0 + X \cdot \bar{Q}_1$

$Y = Q_1 \cdot Q_0$

Legend:
$Q_1^* Q_0^*$

	X =0	X = 1	Y
00	00	01	0
01	10	11	0
10	11	11	0
11	00	00	1

COSTS AND ITS BENEFITS

COMPONENTS COST TABLE

Components	Quantity	Price (per piece)
Push Buttons	4	In Arduino Kit (600 AED)
Potentiometer	1	In Arduino Kit (600 AED)
74HC74 (Dual D type f/ f)	2	2.2 AED
74LS32 (Q2-input OR gate)	1	AED2.50
NE555 Timers	1	3 AED
74LS08 Q2-input AND gate)	2	2.5 AED
HC-SR501 PIR sesnor	1	AED12.00
load cell with hx711 adc HX711 adc	1	AED40.00
ARDUINO	1	In Arduino Kit (600 AED)
Voltage regulator	1	AED8.00
ADC	1	
LM393 LDR	1	AED9.00
Outdoor street lights	1	AED120.00

ESTIMATED LABOR COST

Item name	Item description	Hours	AED/HOUR	TOTAL * 4
Meeting	Weekly meeting	4	1200	19200

Item name	Item description	Hours	AED/HOUR	TOTAL
State machine	State machine design	2	400	800

Item name	Item description	Hours	AED/HOUR	TOTAL *2
Flow diagram	Flow diagram design	3	250	750

20750

MARKET PROJECTION

Dubai Municipality officials are holding talks with other authorities about a move to impose fines of up to Dh10,000 and immediate deportation orders for those caught putting the illegal ads on doors of apartments and villas. The move would also include flyers for other businesses such as cleaning services. The current penalty is just Dh500.

To maintain the cleanliness of the city, residents who find massage cards on their car windows should dispose of them in a bin, instead of throwing them on the street, the municipality said.

These above pictures and the ones shown before show us how bad the scenario of Dubai streets is and how helpless the government is in this matter. They have made certain initiatives from there side to avoid this menace but have clearly been unsuccessful as we still see these cards here and there. They have also asked for people to do their parts. In this busy world people tend to just ignore these matters.

What we are doing here will give them something in return basically something that will pull them towards these cards and want them to dispose them properly. This machine would turn out to do exactly what the Dubai authorities want at this crucial time.

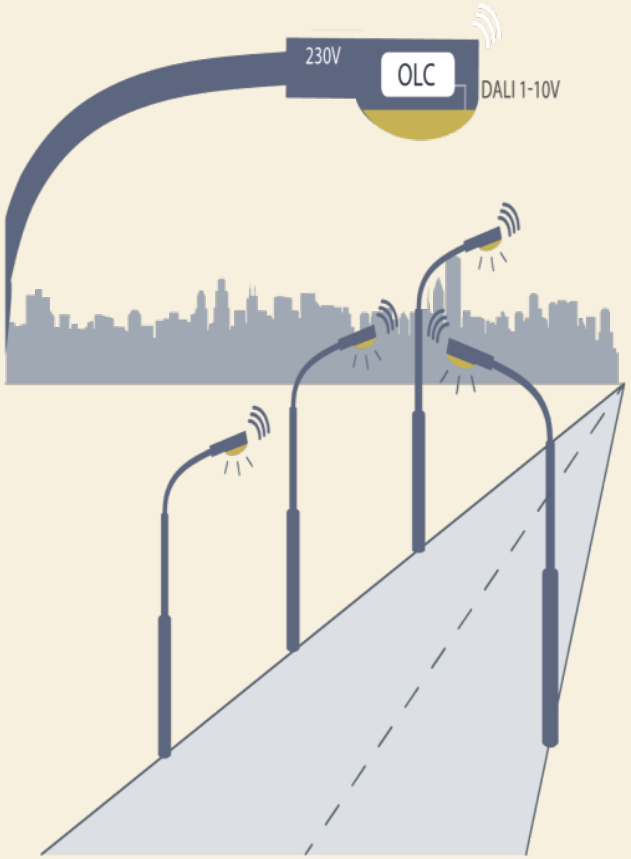
BENEFICIAL OUTCOMES

- This proposal will result into us having cleaner streets.
- It acts as a great business plan for our government.
- It will help the common people to get some help in their bill payments.

STREET LIGHTS

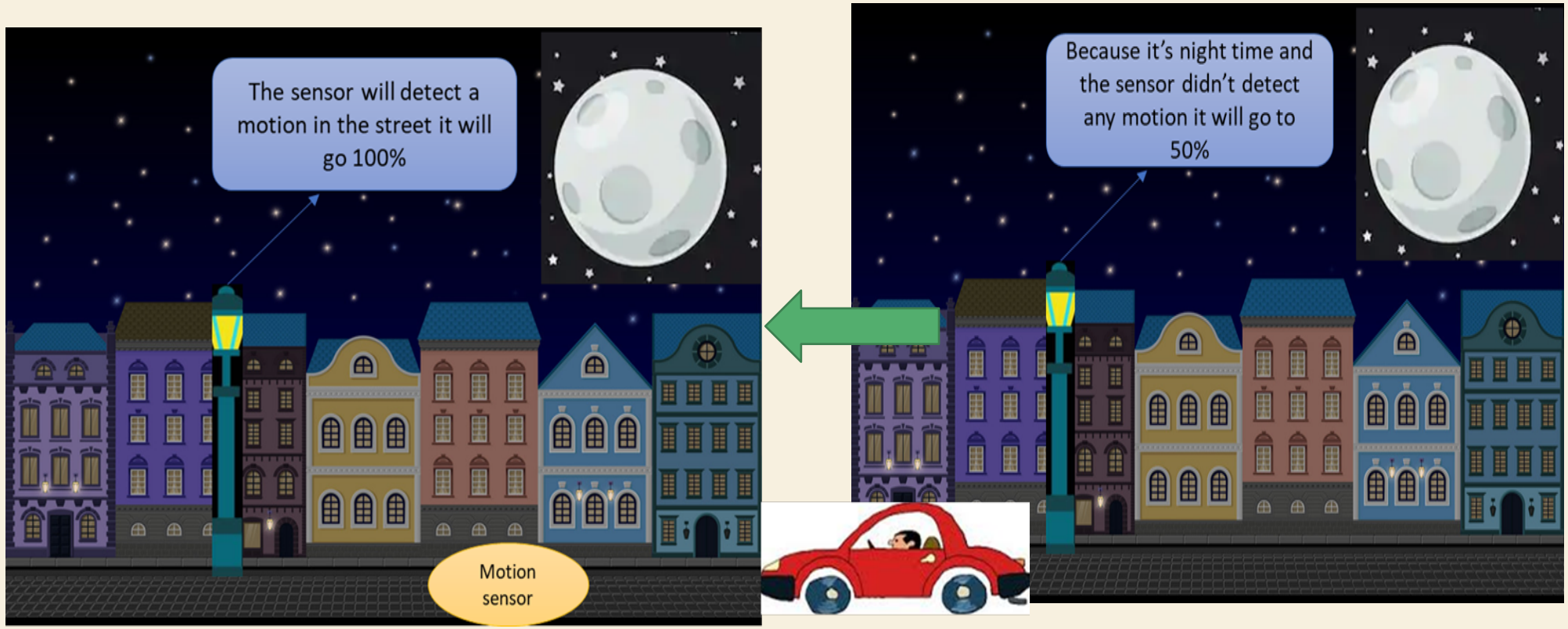
WHAT ARE WE MAKING?

- In this proposal, we are making smart street lights which work based on the brightness level around it and the motor motion detected by it.
- We will be having 4 states in which the street light will be present:
  - (i) 0% brightness
  - (ii) 20% brightness
  - (iii) 50% brightness
  - (iv) 100% brightness
- This street wi ll be having 2 sensors :
  - (i) to detect the brightness level
  - (ii) to detect motor motion

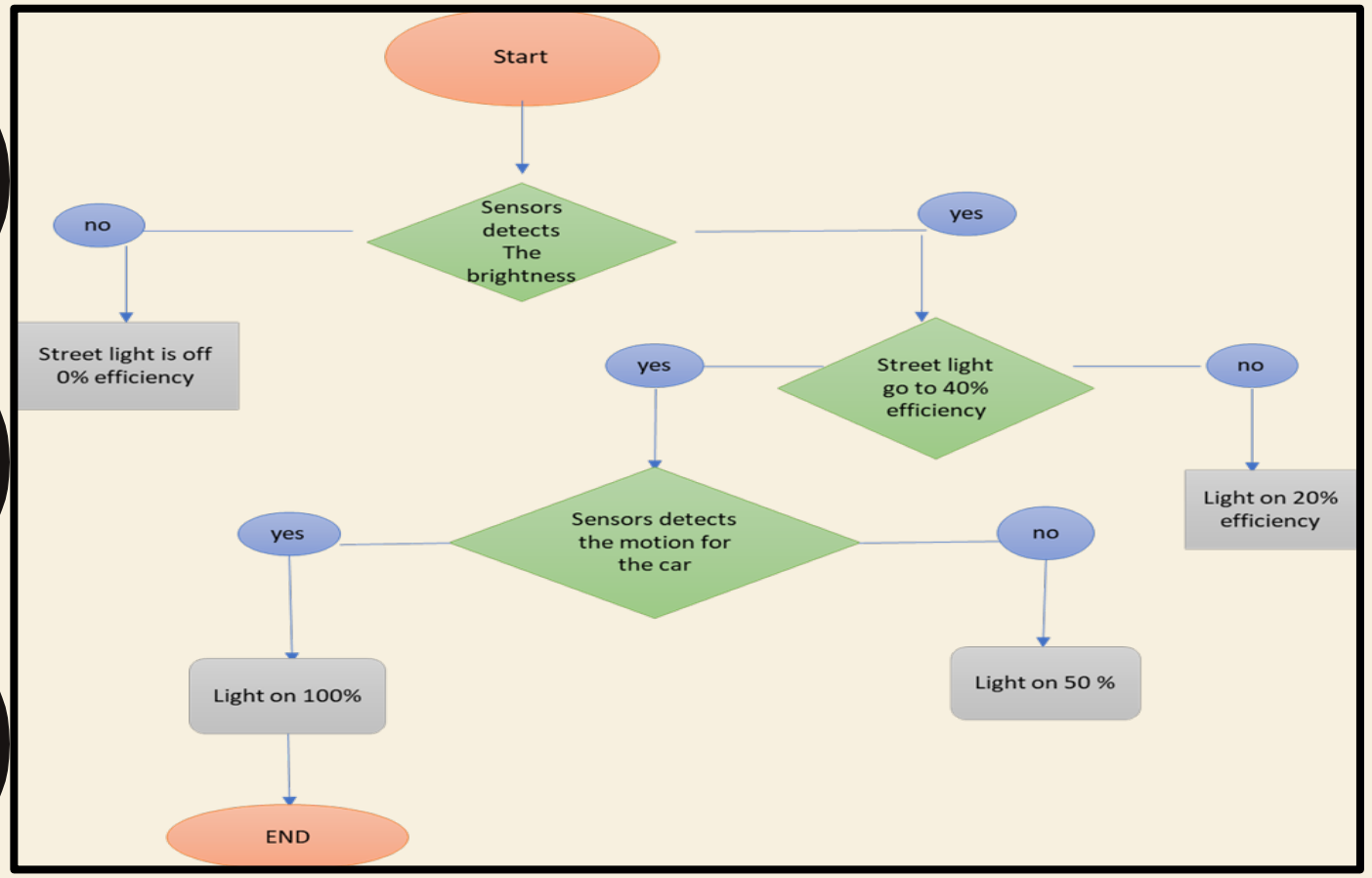


DEMONSTRATION FOR THE FLOWCHART

CONTINUATION



FLOWCHART:



STATES:

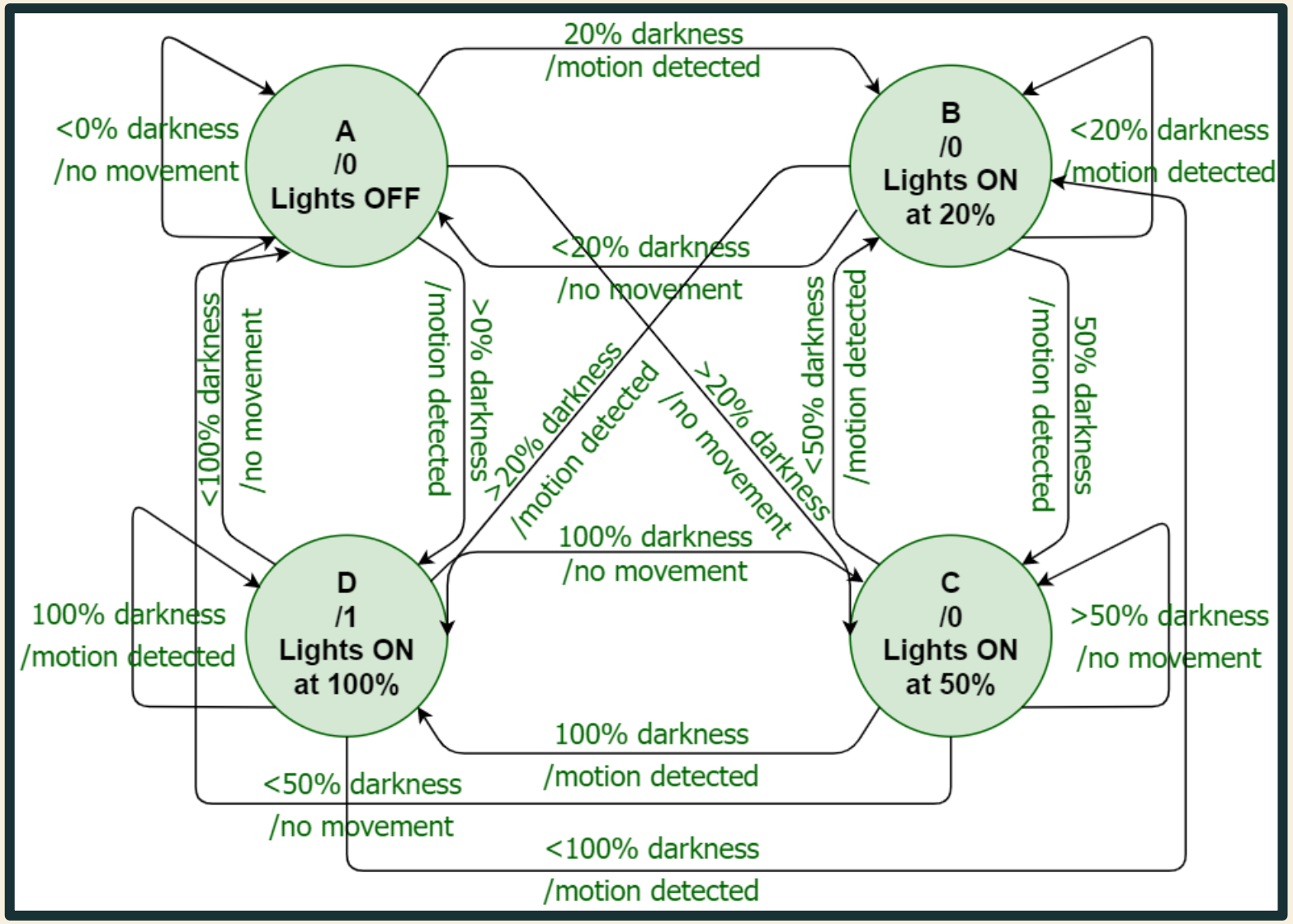
1- first the sensor will check if it's morning or at night.
2- the second state will go to 40 % and will check if we are in evening time or at night time.
3- It will check the motion for the car and go to the last state
4- If we have a motion it will

WORKING OF THE MACHINE

- In the flow diagram we will use two sensor, the first sensor will check the brightness the effect the street light if it’ s day time or evening time or night time depending on that that street light will change the level of the efficiency going from 0% efficiency to the 40 % efficiency and this is the first and the second state.
- After that it will go the check the motion using the sensor at the same time it will check the time if it’ s evening time or night time if we have evening time it will go to 20% efficiency if not it detects the motion if we don’ t have any motion it will change to 50% and if we have motion it will go to 100% efficiency and rest the light again.
- Also in our project we will use the LED light and that reduce the power and electricity that come from the power station and also will reduce the CO2 level.

STATE MACHINE

STATE MACHINE DIAGRAM FOR STREET LIGHTS



STATE ASSIGNMENT FOR STREET LIGHTS

States:
A = 00
B = 01
C = 10
D = 11

Inputs:
X = sensor to detect darkness
When X = 0, less dark.
When X = 1, more dark.
Y = sensor to detect motion
When Y = 0, no motion
When Y = 1, motion

Output:
Z = 100% darkness and detects movement.

Transition Equations:
$Q_1^* =$ X
$Q_0^* =$ Y
Z = $Q_1 . Q_0$

Legend:
$Q_1^* Q_0^*$

	XY 00	XY 01	XY 10	XY 11	Z
00	00	01	10	11	0
01	00	01	10	11	0
10	00	01	10	11	0
11	00	01	10	11	1

COSTS AND BENEFITS

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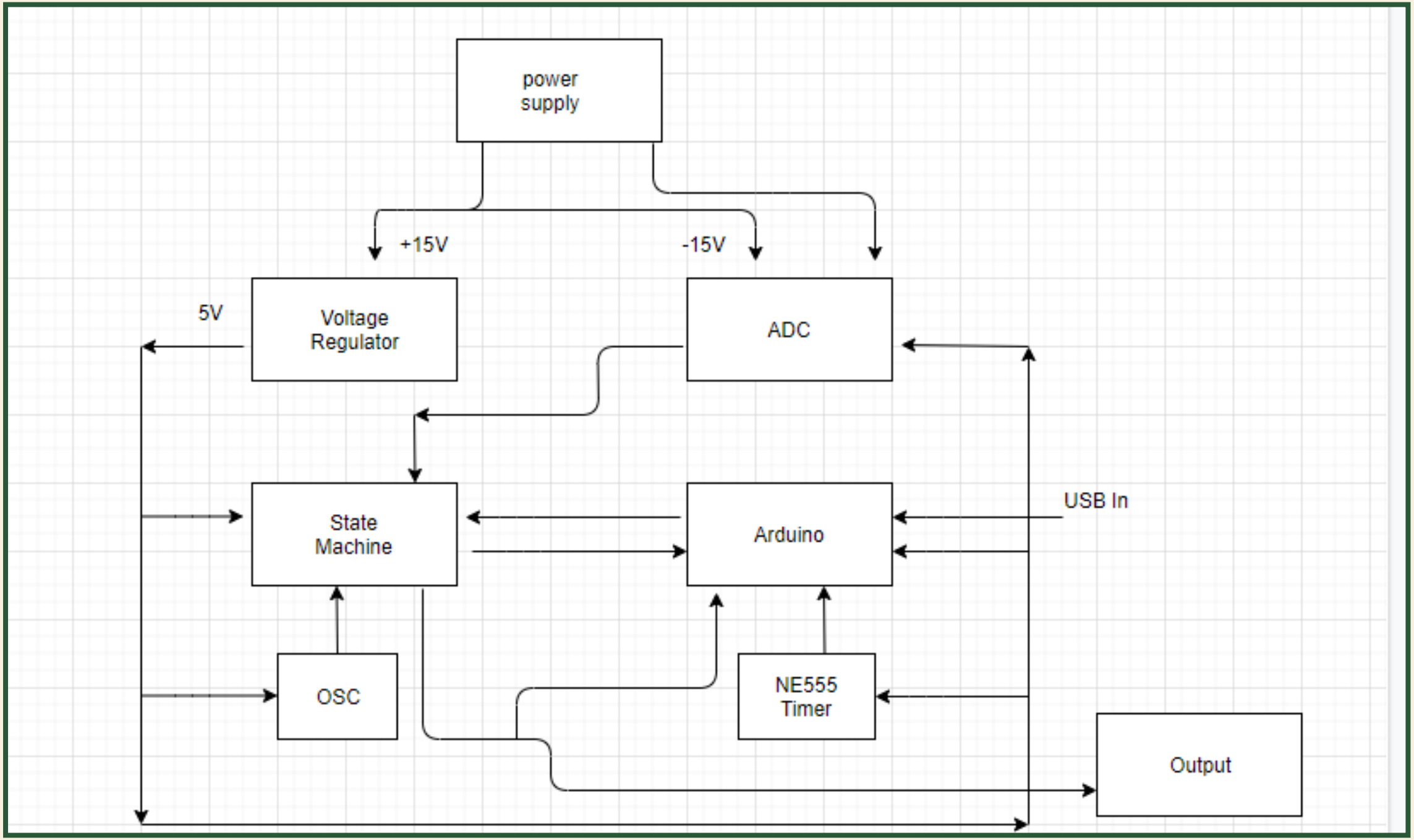
Item name	Item description	Hours	AED/HOUR	TOTAL *2
Flow diagram	Flow diagram design	3	250	750

20750

BENEFITS OF LIGHTING PROJECT

- Will save a lot of electricity about 100,000 KW per year .
- Reduce a lot of CO2 emissions to 430 tons per year.
- Will save a lot of spending on street light.

BLOCK DIAGRAM

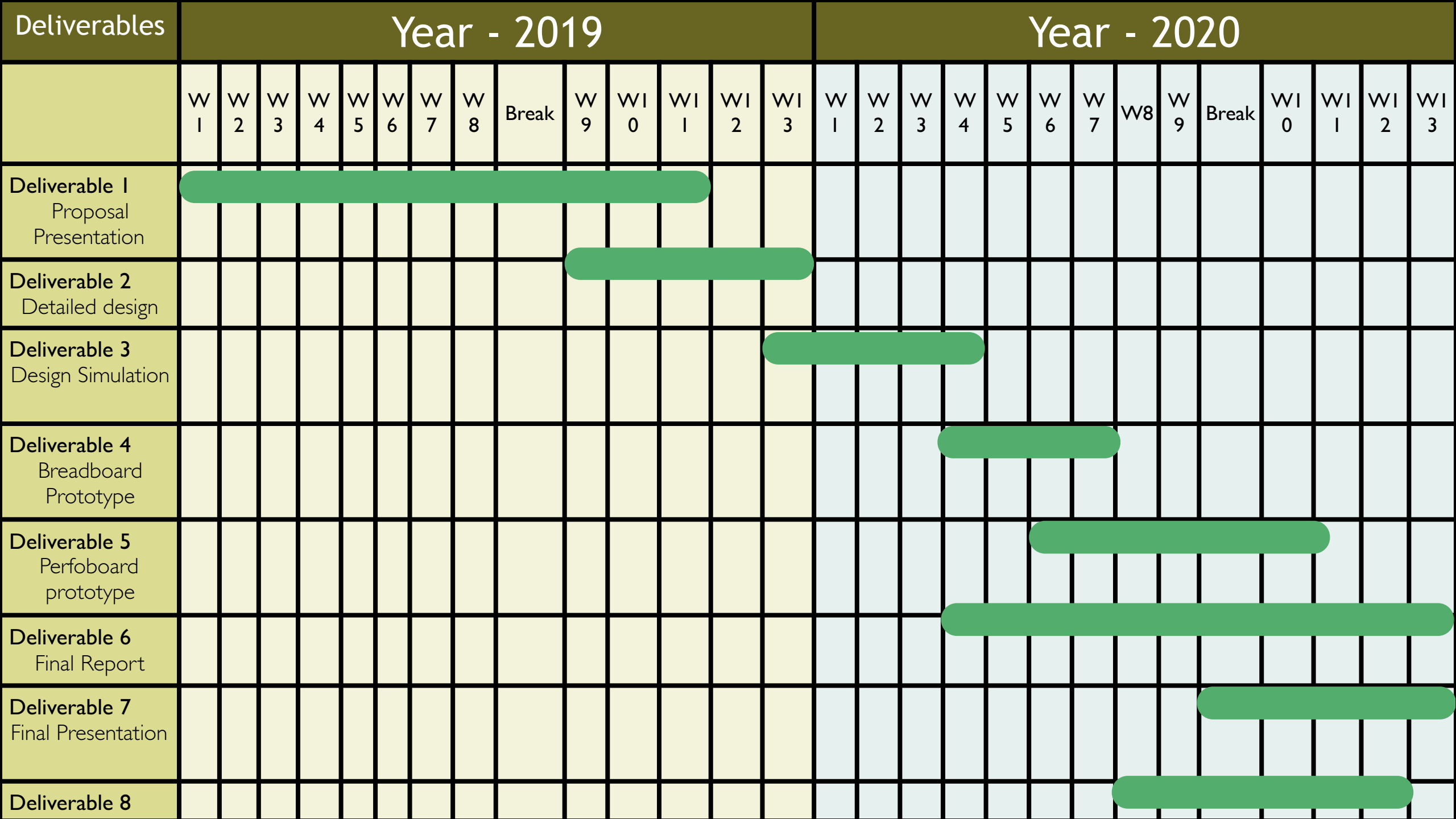

power supply
+15V
-15V
5V
Voltage Regulator
ADC
State Machine
Arduino
USB In
OSC
NE555 Timer
Output

BLOCK DIAGRAM WORKING

The user inputs all the necessary inputs through the arduino, which is connected to all the sensors and is also connected to the output. These inputs are then processed to the state machine after the NE555 timer is used to set a time delay until the input page until processed.

At the state machine the inputs are converted to binary using the ADC, based on preset codes. They are then converted into states and a particular state based on the inputs are outputted.

GANTT CHART


Deliverables
Year - 2019
Year - 2020
W 1
W 2
W 3
W 4
W 5
W 6
W 7
W 8
Break
W 9
W1 0
W1 1
W1 2
W1 3
W 1
W 2
W 3
W 4
W 5
W 6
W 7
W8
W 9
Break
W1 0
W1 1
W1 2
W1 3
Deliverable 1
Proposal Presentation
Deliverable 2
Detailed design
Deliverable 3
Design Simulation
Deliverable 4
Breadboard Prototype
Deliverable 5
Perfoboard prototype
Deliverable 6
Final Report
Deliverable 7
Final Presentation
Deliverable 8

REFERENCES

- https://www.khaleejtimes.com/kt-for-good/kt-for-good-dont-leave-massage-cards-on-the-streets-in-dubai
- https://twitter.com/khaleejtimes/status/1096611513576710146
- https://www.thenational.ae/uae/dubai-s-sleazy-massage-card-distributors-to-face-deportation-under-new-rules-1.619903?videoId=5719243807001
- https://www.youtube.com/watch?v=EoBX8XfjuLI
- https://gulfnews.com/going-out/society/barrage-of-massage-cards-frustrates-residents-1.2008289
- https://gulfnews.com/going-out/society/watch-have-massage-cards-gone-out-of-control-in-dubai-1.2284813
- https://gulfnews.com/lifestyle/community/heaps-of-massage-cards-found-every-day-1.2169849

THANK YOU!

ANY QUESTIONS?