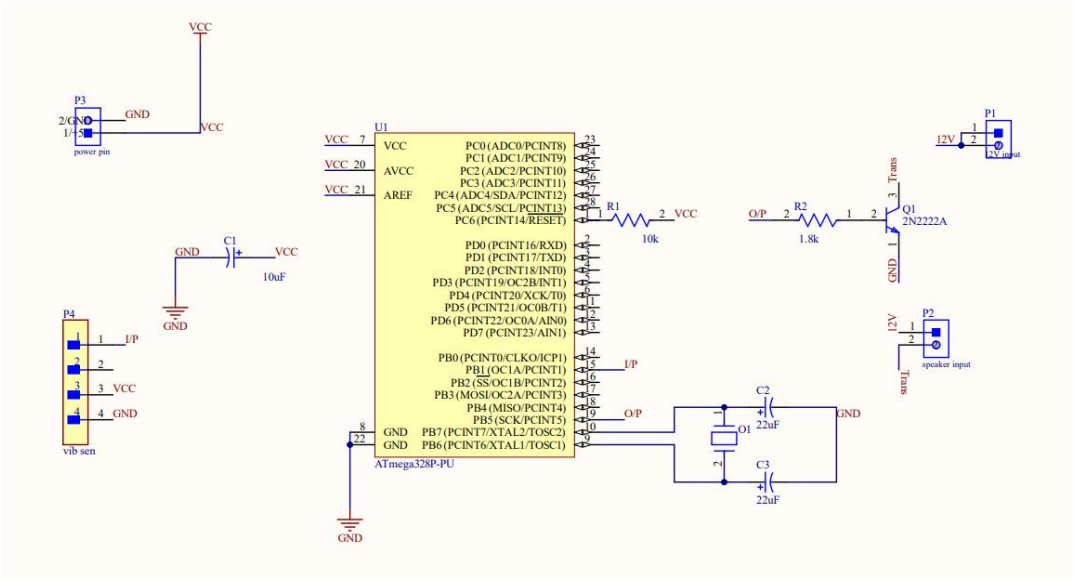
200685F

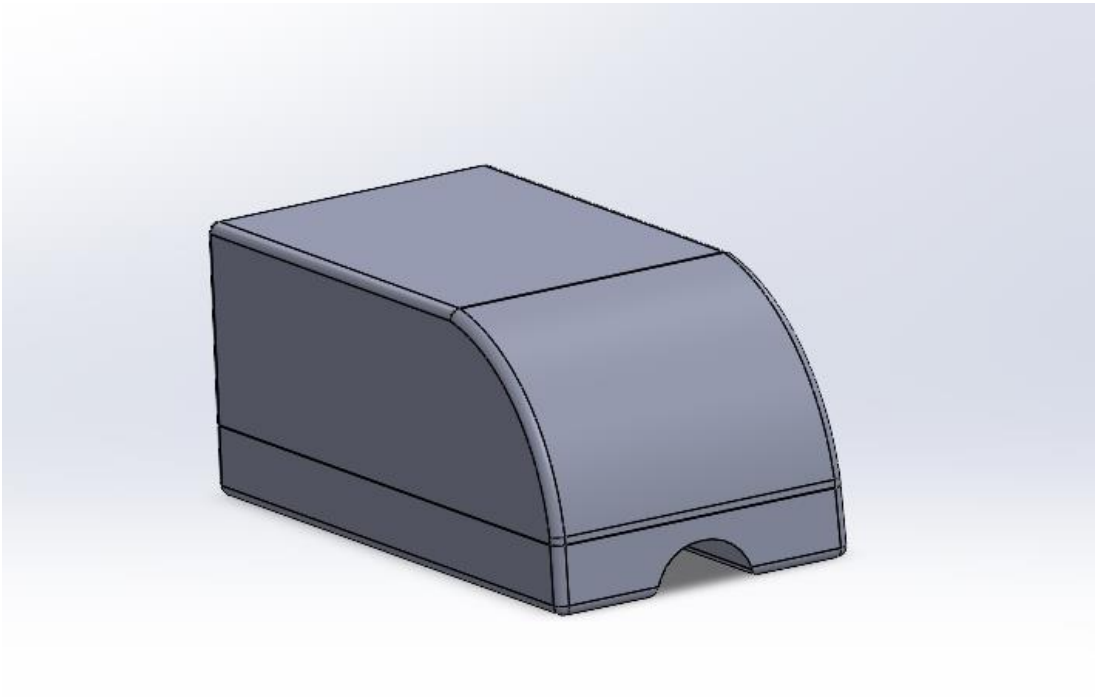
Preliminary Design

1.0 Implemented Design

1.1 Schematics



1.2 Solidworks

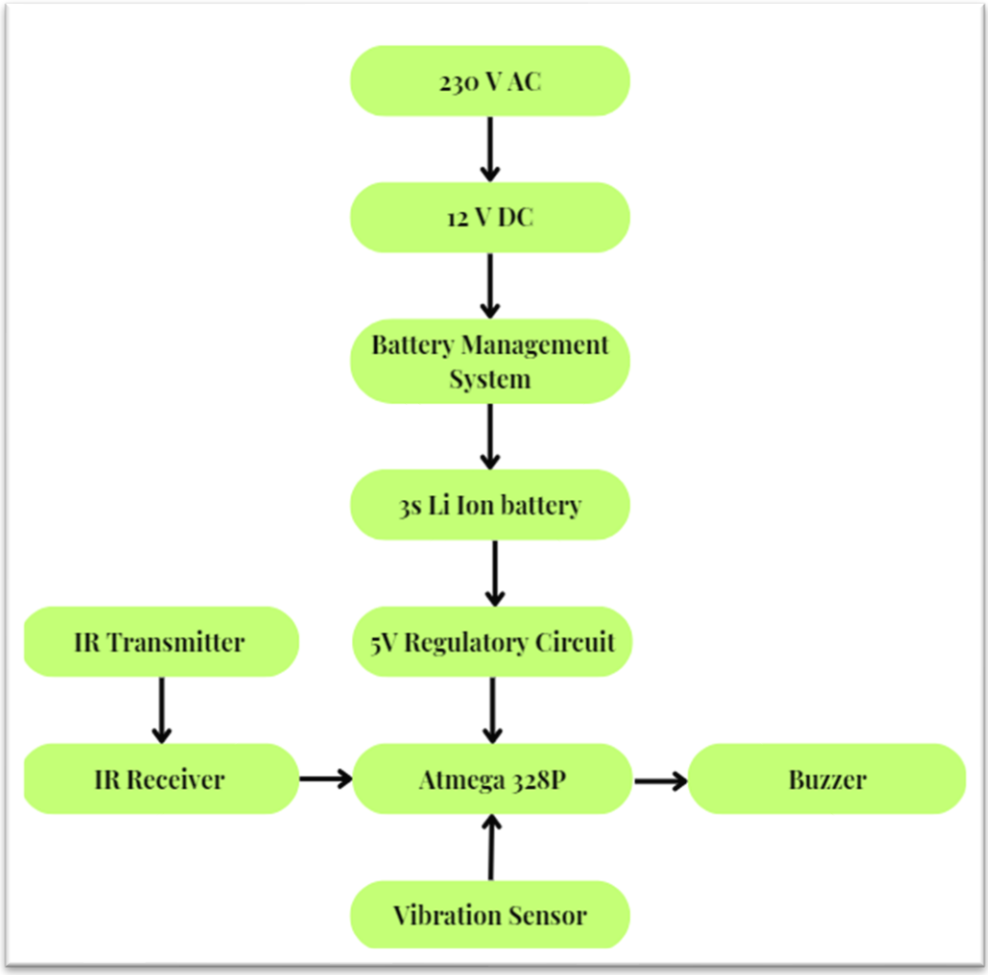


2.0 Problems identified by me considering the course contend delivered by Prof. Jayasinghe.

1) Whole circuit should be included in the schematics.
2) Inputs should be aligned on the left side, outputs should be in the right, VCC should be at the top and GND should be in the bottom.
3) Instead of connecting wires for all, using Netlist in the schematics
4) Components numbering in the schematics should follow an order.
5) Enclosure should have aesthetic view.
6) Draft angles should be there in the design, to do the molding.

3.0 Problems/Improvements identified/proposed by members of the group.

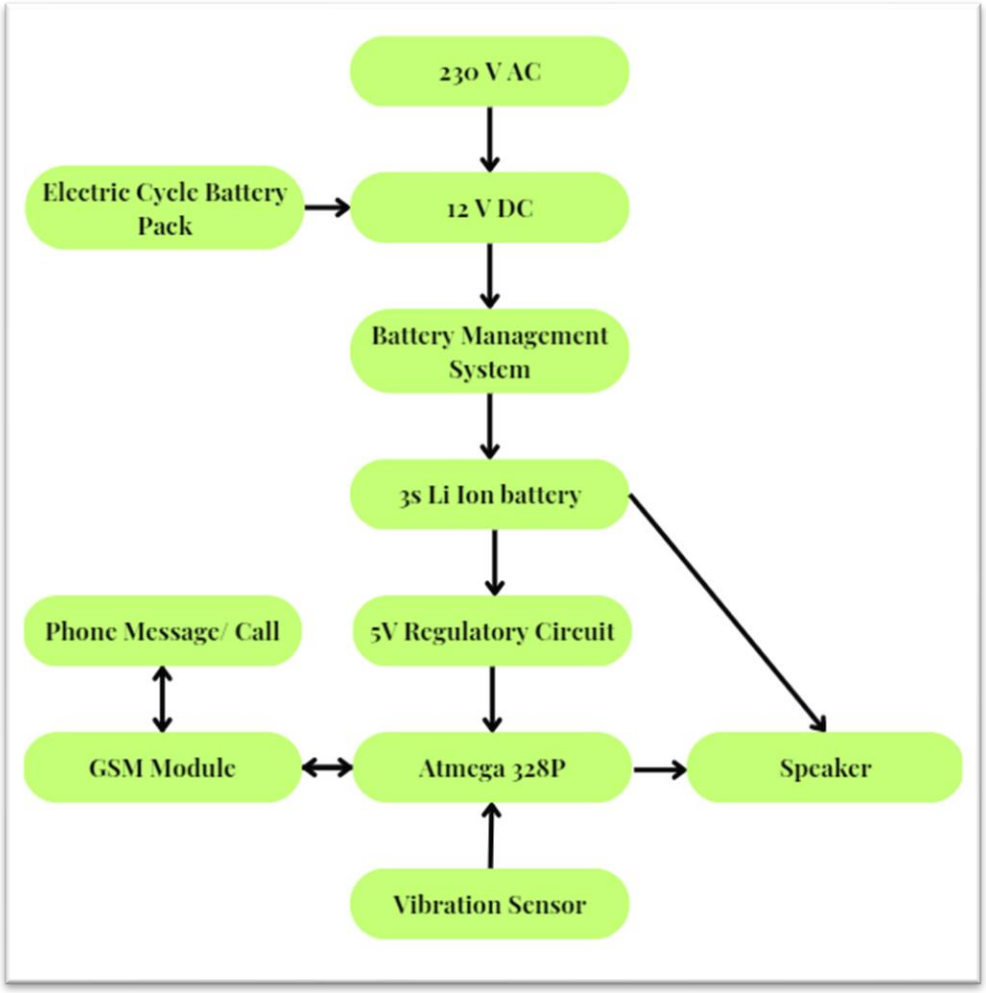
Block Diagram 1



Features:

1) To reduce the device size, a buzzer is employed instead of a 12V alarm, albeit with a decrease in loudness.
2) To create the switch module internally, IR transmitter and receiver modules are incorporated, bypassing the need for commercially available products.

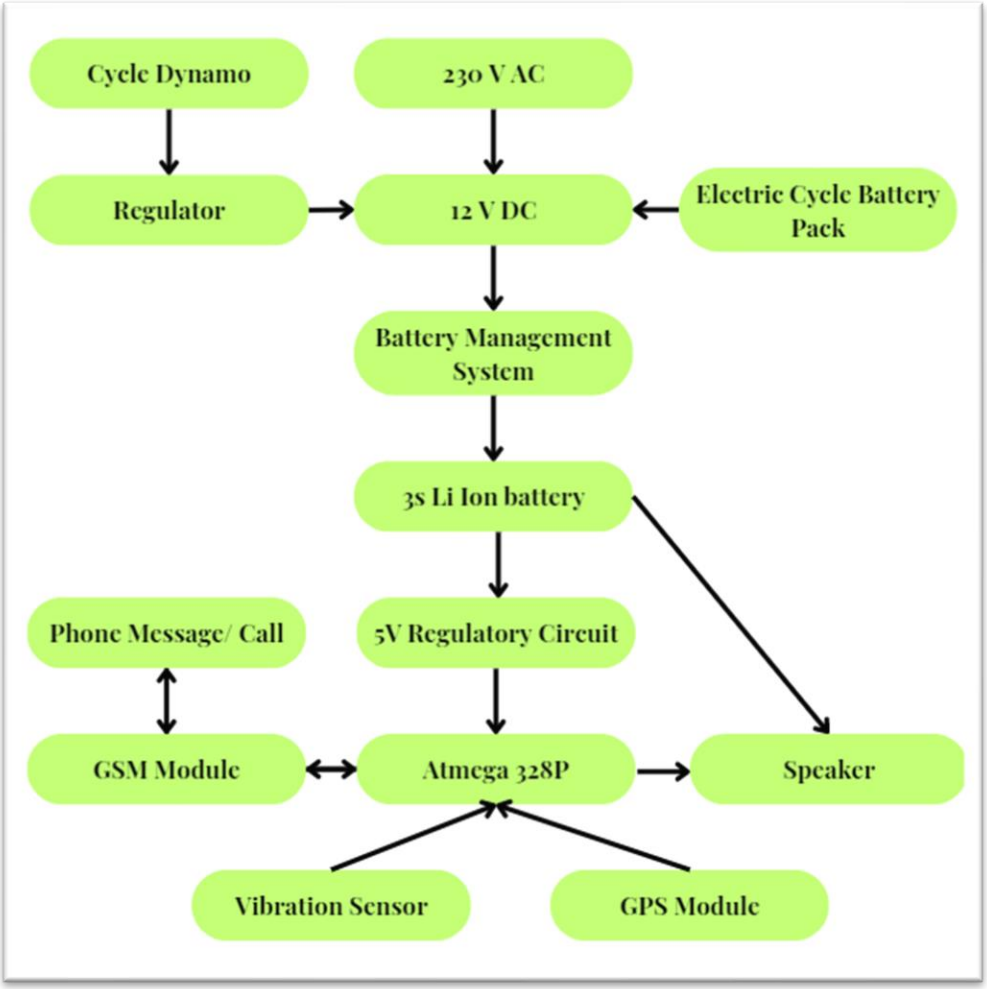
Block Diagram 2



Features:

1) To enhance the thief's sense of fear, a powerful 12V alarm is reintroduced.
2) To enable remote operation, the device replaces the IR transmitter and receiver with a GSM module, granting users control from any location.
3) In addition to the speaker output, the user will receive an alert call whenever there is any contact with the cycle.
4) For electric cycles, the device can be directly connected to the electric battery pack, enabling extended device operation.

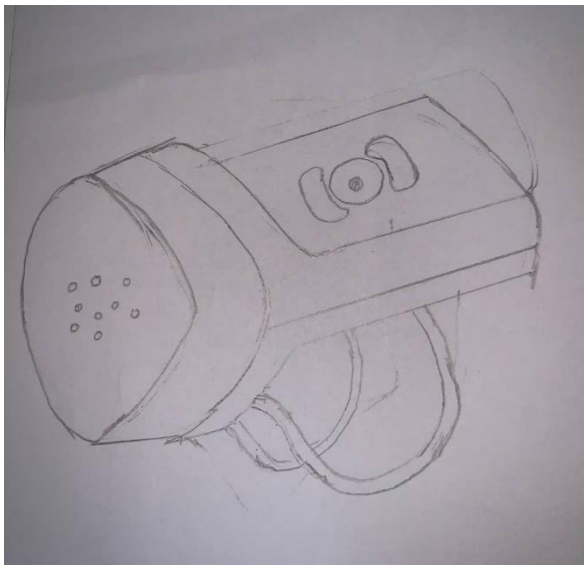
Block Diagram 3



Features:

1) A GPS module is incorporated to track and share the location of the cycle in the event of theft.
2) A dynamo, coupled with a regulator, is being considered as a power source for the device.

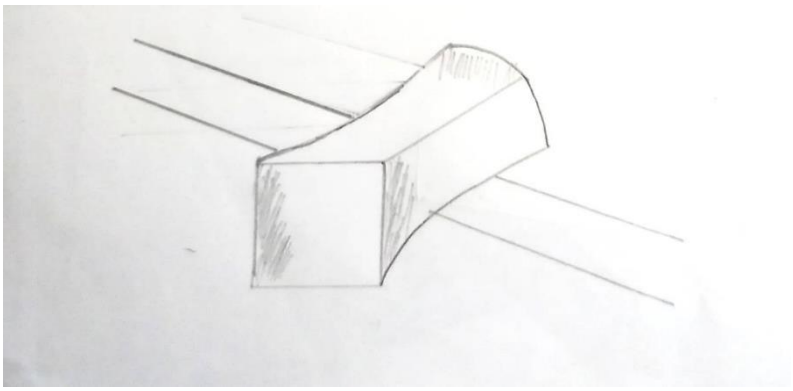
Enclosure Sketch 1



Features:

1) Specially designed for easy installation on the handlebars.
2) Compact in size and adjustable to fit various handlebar sizes.

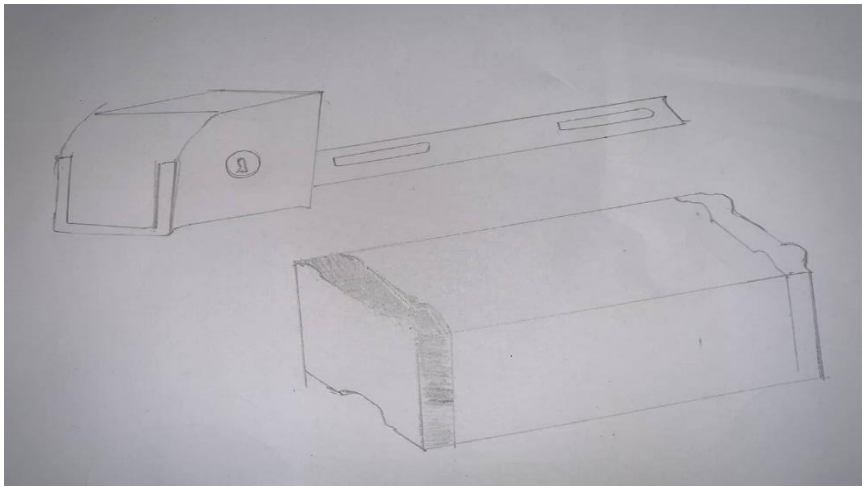
Enclosure Sketch 2



Features:

1) Specially designed for easy installation on the handlebars.
2) Features an enhanced aesthetic compared to the previous design.

Enclosure Sketch 3



Features:

1) Designed to be securely attached to the down tube.
2) A metal bar is affixed to the bicycle frame, serving as a locking mechanism to secure all the components in the top part. It can be locked and unlocked using a key and lock.

4.0 Problems/Improvements identified/proposed by users.

Name	Age	Are you having bicycle	How often do you ride your bicycle?	Have you ever experienced theft or attempted theft of your bicycle?	How concerned are you about the security of your bicycle when leaving it unattended?	Would you be interested in a device that helps prevent bicycle theft?	Would you find a button to activate/deactivate an anti-theft system on your bicycle convenient?	Would you okay if the system sends a sms, if anyone touches your cycle.	How close would you prefer to be to your bicycle in order to activate or deactivate the anti-theft system?	How important is it for you to have an audible alarm that triggers when someone touches your bicycle?	What level of loudness would you consider appropriate for the alarm to deter potential thieves?	Are there any specific features or functionalities you would like to see in a cycle anti-theft detector?	How much would you be willing to pay for a reliable and effective cycle anti-theft detector?
Yathursiya	23	Yes	Weekly once	Yes, less than 5 times	5	Yes	Yes	Yes	more than 100 m	Yes its better	Can hear around more than 20m		>5000 & <15000
Tharmilan	23	Yes	Weekly once	Yes, less than 5 times	4	Maybe	Yes	Yes	Less than 1 m	Yes its better	Can hear around more than 20m	Electric shock when they try to steal	<5000
Kalistan	23	Yes	Weekly once	Yes, less than 5 times	4	Maybe	Yes	Yes	Less than 1 m	Yes its better	Can hear around for 5 m		<5000
.Mathushanth	24	Yes	Weekly once	No	5	Maybe	Yes	Yes	more than 100 m	No need of an alarm	Can hear around for 5 m		<5000
rajkumar	24	No	Monthly once	No	1	Maybe	Maybe	Maybe	more than 100 m	No need of an alarm	Can hear around for 5 m	no	<5000
Yadhoo	23	Yes	Daily	Yes, less than 5 times	4	Yes	Yes	Yes	more than 100 m	Yes its better	Can hear around for 5 m		<5000
Nilesh	22	Yes	Daily	Yes, less than 5 times	5	Yes	Yes	Yes	Less than 1 m	Yes its better	Can hear around for 5 m		>5000 & <15000
Rajeswary	47	No		No	2	No	Yes	Yes	Less than 1 m	Yes its better	Can hear around for 5 m		>15000
Rajana	23	Yes	only during any emergency	Yes, less than 5 times	1	Yes	Yes	Yes	more than 100 m	Yes its better	Can hear around more than 20m	It will be better of it has a gps tracking system.	>5000 & <15000
Mathulan	16	Yes	Weekly once	Yes, less than 5 times	4	No	Maybe	Maybe	Less than 1 m	Yes its better	Can hear around more than 20m		>5000 & <15000
S.Nirushan	24	Yes	Monthly once	Yes, less than 5 times	5	Yes	Yes	Yes	more than 100 m	No need of an alarm			<5000
Khirushihan	22	Yes	Daily	Yes, less than 5 times	5	Yes	Yes	Yes	Less than 1 m	Yes its better	Can hear around for 5 m		>5000 & <15000
Amrith	22	Yes	Monthly once	Yes, less than 5 times	5	Yes	Yes	Yes	more than 100 m	Yes its better	Can hear around for 5 m	360° dashcam in bicycle which can be controlled through a mobile app. Device should be chargeable with solar power or through riding the bike.	<5000
Birunthaban	21	Yes	Monthly once	No	4	Yes	Yes	Maybe	Less than 1 m	Yes its better	Can hear around for 5 m		<5000
Thulasithan	21	No		Yes, less than 5 times	5	Yes	Maybe	Yes	Less than 1 m	No need of an alarm	Can hear around for 5 m		<5000
Donald	20	Yes	Monthly once	No	5	Maybe	Yes	Yes	Less than 1 m	Yes its better	Can hear around for 5 m		<5000
Mathusha	18	Yes	Monthly once	No	5	Yes	Yes	Yes	more than 100 m	Yes its better	Can hear around more than 20m		<5000
Vaishnavi	22	Yes	Daily	No	5	Yes	Yes	Yes	more than 100 m	Yes its better	Can hear around more than 20m		>5000 & <15000

Users anticipate purchasing a product priced between 5000 and 15000 LKR.

Users desire a robust alarm system that offers maximum security against burglars.

Users prefer a switch that can be remotely controlled from a considerable distance.

5.0 Schematic and Solid work design of the improved design.