Name of Internal Guide: Contact No. & Email	

Project approved / Not approved

PBL Guide   PBL Coordinator   Head of Department

Project Based Learning - Project Approval Form

Title :

motor starter(GSM/GPRS) using DTMF Technology.   Form No.

Department: <u>ENTC</u>	**Academic Year: 2020-21**
Semester : <u>4</u>	**Group No. : <u>G14</u>**
Project Title: <u>motor starters (DTMF Technology with Arduino micro-controller).</u>	
Project Domain/s: <u>Embedded system.</u>	

Group Members Details:

Sr. No.	Class & Div.	Roll No.	Registration No	Name of Student	Contact No.	Email ID
1	**SE-B**	**66**	**181007745**	**Parvekar Divya Dinesh**	**9730971386**	divya.parvekar.entc.2018@vpkbiet.org
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Project Idea:

        In our farms we get power supply from the local grid only for about 6 hours a day. Timings are not regular, availability of power can be early morning or late in the evenings or even midnight. Every time going to the bore well location to check power availability, start or stop the motor was very painful process. Also we had to ensure motor runs at least 2-3 hours every day to supply adequate water for the drip system. Quite some time we were exploring options to solve this problem by remotely operating the motor and also know the status. There are devices available in market which will start the motor as soon as there is a power supply, but they don't have the feature to stop the motor whenever we want. And also there is no way to know the status of motor ON/OFF at any point of time. This usually leads to over irrigation, leading to loss of soil fertility and also waste of electricity.

        So finally to solve this problem I thought of an idea which might solve this problem, So what are we planning is to create some hybrid attachments for our conventional starters(No need to buy new one) that can turn ON/OFF motor as per our will over a phone call.

        We will use **5V 4 Channel Relay Module** to Turn ON/OFF our 3-phase motor using conventional **DOL motor starter**. When we want to start our motor we shall call on the sim card no. (Which is present in the SIM800L) and it (Arduino) will automatically answer the call and wait for our commands. As we press *(star) on the keypad of our phone the motor will immediately start and the call will be disconnected. And to turn OFF the motor we again will call on the sim card no. and press #(hash) to turn it(Motor) OFF. And when power supply is available the module shall call us for the further instruction.

        In above demonstration we will use **Aruino** to pass and receive **AT** commands to and from the **SIM800L** module. And then implement them respectively on the **5V 4 Channel Relay Module** and vice versa**.**

Project Based Learning - Progress Review Form

Group No.				
Sr No	**Date**	**Activity**	**Remark**	**Signature of Guide**
1	25/01/2021	**Discussion of Idea, Workbook filling, hardware requirement and finalising the project.**	**Did cost estimation, hardware/ software requirements and finalised the project.** **Github link : https://github.com/realcapacitor/pbl_project**	
2	01/02/2021	**Been through research papers, previously present technology and going on researches.**	**Learned about DTMF technology, advantages, limitations and usability.** **Research Papers:** **1. IJAREEIE : https://github.com/realcapacitor/pbl_project/tree/main/Research_papers**	
3	08/02/2021	**Analysing circuit diagrams, research about adequate power supply and wiring.**	**Needed 5V 2A for Arduino microcontroller and 4.4V 2A for SIM800L module.**	
4	15/02/2021	**Analysing AT commands and their uses. Did basic testing of the SIM800L module and its components.**	**Learned about AT commands and their applications.** **AT commands : https://github.com/realcapacitor/pbl_project/blob/main/SIM800L/SIM800_Series_AT_Command_Manual_V1.09.pdf**	
5	22/02/2021	**Researched about DTMF technology, uses, complexity, operation, history and future of the technology.**	**Learned about DTMF command and working criterion** **Research papers:** **1. IJERT : https://github.com/realcapacitor/pbl_project/blob/main/SIM800L/DTMF_specific/a-review-paper-on-dual-tone-multi-frequency-IJERTCONV5IS23006.pdf** **2. IJSRP : https://github.com/realcapacitor/pbl_project/blob/main/SIM800L/DTMF_specific/ijsrp-p1319.pdf**	
6	01/03/2021	**Studied about 5V 4 Channel Relay Module, its uses, maximum load limit and operation.**	**Learned about its applications.** **5V 4 Channel Relay Module : https://github.com/realcapacitor/pbl_project/tree/main/Relay_Module/relay**	

7	**08/03/2021**			
8	**15/03/2021**			
9	**22/03/2021**			
10	**29/03/2021**			

PBL Rubric

1. **Idea Inception (5%)**

2. **Outcomes of PBL/ Problem Solving Skills/ Solution provided/ Final product (50%) (Individualassessment and team assessment)**

   a. **Expected Outcomes of PBL :** _To save valuable time efforts._
   b. **Problem Solving Skills used:** _Yes_
   c. **Solution provided   :** _An hybrid attachment on conventional technology._
   d. **Final product   :** _Ready_
   e. Assessment type.   : _Team assessment._

3. **Documentation (Gathering requirements, design & modelling, implementation/execution, use of technology and final report, other documents) (25%)**

   a. **Defining requirements:**
   b. **Design & Modelling:**
   c. **Implementation/execution:**
   d. **Use of technology:**
   e. **Final report:**
   f. **Other documents (if necessary)**

4. **Demonstration (Presentation, User Interface, Usability etc) (10%)**
   a. **Presentation**
   b. **User Interface**
   c. **Usability etc**

5. **Contest Participation/ publication (5%)**

6. **Awareness /Consideration of -Environment/ Social /Ethics/ Safety measures/Legal aspects (5%)**

Literature Survey :

Circuit Diagram: