1. **Project Name**: Home Automation, Group #15
2. URL of your project’s website:
   * Website: https://ruautohome.weebly.com/
   * Repository: https://github.com/mahmoudbachir/homeautomation
3. **Team profile:**

**Mahmoud Bachir**

1. Programming
   1. C++
   2. Java
   3. Assembly Language (MIPS + RISC-V)
2. Technical
   1. Web Design
3. Presentation
   1. Public Speaking Skills
   2. Powerpoint
   3. Video Editing
4. Management and Organization
   1. Leadership Role in Greek Organization
   2. Organize group meetings (location + time)
   3. Documentation

**Smruthi Srikumar**

1. Programming
   1. C++
   2. C
   3. Java
2. Technical
   1. Arduino
   2. Circuit Configuration
   3. Raspberry Pi
3. Management
   1. Experience in leadership positions
   2. Organized

**Jimmy Wen**

1. Programming
   1. Java
   2. C
   3. HTML/CSS
2. Technical
   1. Web design
   2. Arduino

**Kyle Ross**

1. Programming
   1. C++
   2. Java
   3. Assembly (MIPS)
2. Technical
   1. Unix
   2. Arduino

**Brendan Li**

1. Programming
   1. C/C++
   2. Assembly
   3. Python
2. Technical
   1. Arduino/Circuit Building

**Gunbir Singh**

1. Programming
   1. C/C++
   2. Assembly(MIPS + RISC-V)
2. Technical
   1. Arduino
   2. Raspberry pi

**Aaron Christie**

1. Programming
   1. C++, Java

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1. Proposed project description:
   * Problem: As the advancement of technology continues, people find themselves with more tasks to complete on a daily basis. It is not uncommon for people to find themselves unable to keep track of all these tasks, forgetting simple yet crucial actions. In the standard household, some examples of these actions include playing music for guests, setting the brightness of the room’s lighting or even locking the door on the way out. The consequences of making these errors can range from trivial to critical, all of them creating unnecessary stress on the homeowner. Remembering to manually perform all of these actions can also be a waste of time. Modern workers often find themselves working at home and even during their commute. Although the individual action of flipping a light switch or turning a key to lock the door may be done quickly, these minute activities can quickly build up and cause significant delay to homeowners. Suppose someone is leaving for work in the early morning because he needs to catch a train. This person may miss the train if he or she needs to perform ten tasks that are located all around the house.  
     These are just a few of many problems that exist with standard houses. Our home automation will focus specifically on the following:
     1. Most modern light bulbs require manual labor from its users because of the switch mechanism. People often forget to turn off lights or feel lazy to get up from where they are to turn them on/off. This can lead to higher than necessary electric bills, which is an easily avoidable waste of money.
     2. With a home automation system, the ability to interact with and manipulate the system is really important. As this might be in a consumer’s home, ease of use is very important.
     3. Many people live alone and become absorbed in their work around the house. Such people may not notice when someone else enters or leaves the house. These people are vulnerable to crime and accidents.
     4. It may be difficult to constantly change the music while having a conversation. You may want to change the volume or skip to the next track but don’t want to interrupt the conversation you’re having significantly. Convenience is very crucial in most situations.
     5. A voice-activated, home automation device that is constantly listening for commands might get confused and register parts of a normal conversation as an unexpected command.
   * **Solution:** Home automation solves all of the problems mentioned previously with the following features:
     1. **Light control:** We make light bulbs and switches easily accessible and user friendly. One way to make it more user friendly and convenient would be to allow users to control light bulbs from a remote device. Within a given room, the user would be able to turn the lights on or off, change the colors of the lights and control the brightness of the lights. This would allow it to be more accessible and would also require less effort from the user.
     2. **Mobile application:** Create an mobile application to interact with our system. Our mobile app will be able to monitor multiple sensors and be able to control systems around the house, even when the user is away from their home.
     3. **Door buzzer**: While the customer is in the house, he or she may want to be alerted to the entry or exit of another person. A simple solution to this is an automatic buzzer that makes a sound whenever a door is opened or completely closed. If a buzzer is installed nearby each door, the customer can also identify the location or proximity of the door that was used. The activation of a door buzzer can also be shown on the mobile application. This combination of features makes our system user friendly to the visually and audibly impaired, thus broadening our customer base.
     4. **Music control**: Make controlling music easier and more convenient by allowing you to control your music playing device by your voice. With commands that allow you to pause/play and increase/decrease volume, you can control all music sources with this (Spotify, Pandora, local files)
     5. **Key-Phrase:** with the use of a key-phrase, this device would no longer have to listen continuously for commands and figure out which ones are genuine, rather it would listen for a key-phrase which would be followed with a command.
2. At the end of this section, summarize in a bulleted list what the user will be able to do with your system (“*functional features*”).
   * Control Light Bulb (On-Off)
   * Control Light Bulb Brightness (10%, 20%,..etc)
   * Control Light Bulb Color (Green, Blue, etc.)
   * Control Music (Play-Pause)
   * Control Music (Volume: Increase-Decrease)
   * Connect to Bluetooth Speaker
   * Activate using a key-phrase
   * Sound buzzer when door opens
   * Phone application to monitor the system
   * Database to keep track of user information (User-Password)
3. Plan of work and product ownership:

In the next few weeks leading up to the presentation of the first demo, here are the following items we hope to achieve;

* + Application developed and can communicate with Arduino properly
  + Arduino can properly communicate with microcontroller
  + Database setup for user account storage
  + Micro-controller can communicate with devices (bulb + music device)
  + Programming for individual functions completed (utilizing different devices)
  + Incorporate a dedicated low-profile microphone to listen for key phrase.

1. Split your team into pairs of students (a team of 6 students will have 3 pairs), and each pair should list what specifically they will contribute to the end product:
   * Pairs:
     1. Aaron & Smruthi
        1. User Interface of app
        2. Arduino coding
     2. Mahmoud Bachir & Jimmy Wen
        1. Database (MySQL)
        2. Server Side Web Development (PHP)
           1. Website Design
     3. Gunbir Singh & Kartikey Thapliyal
2. Data processing
3. Data capture and storage
   * 1. Kyle Ross & Brendan Li
4. Speech recognition
5. Coordination of