

بسم الله الرحمن الرحيم

**Project Management project**

**Home Automation System**

Under the supervision of :

Prof.Dr. Ibrahim El-Semman

Team members :

* Ibrahim Shaaban Abd El-badeea Ibrahim (Group 1-General)
* Ahmed Abd El-Harres Abd El-Rahman Sayed (Group 1-General)
* Ahmed Khaled Ragab Metwally (Group 1-General)
* Ahmed Gamal Abd El-Rahman Khalaf (Group 1-General)
* Abanob Essam Ayad Aziz (Group 1-General)
* Ahmed Gamal Mohammed Saad (Group 1-General)
* Ahmed Ali Farhan Soliman (Group 1-General)

**Faculty of computers and information**

**Project Charter**

**Official project name**: Home Automation System

**Project sponsor**: Commission of Persons with Special Needs

**Project manager**: Ibrahim Shaaban

**Project members:**

Ibrahim Shaaban, Abanob Essam, Ahmed Abd El-Hares, Ahmed Khaled, Ahmed Gamal Abd El-Rahman, Ahmed Gamal Mohammed, Ahmed Ali.

**Project Purpose**:

Helping people to manage their home specially aged ones and those with special needs via using an application that can accesses anything at home and controls it easily.

**Business Case:**

Home automation is [building automation](https://en.wikipedia.org/wiki/Building_automation) for a home, called a smart home or smart house. A home automation system will monitor and/or control home attributes such as lighting, climate, entertainment systems, and appliances. It may also include home security such as access control and alarm systems. When connected with the Internet, home devices are an important constituent of the [Internet of Things](https://en.wikipedia.org/wiki/Internet_of_Things) ("IoT").

A home automation system typically connects controlled devices to a central [smart home hub](https://en.wikipedia.org/wiki/Smart_home_hub) (sometimes called a "[gateway](https://en.wikipedia.org/wiki/Residential_gateway)"). The [user interface](https://en.wikipedia.org/wiki/User_interface) for control of the system uses either wall-mounted terminals, tablet or desktop computers, a mobile phone application, or a Web interface that may also be accessible off-site through the Internet.

In our project we will use a mobile phone application.

**Project scope:**

1- This application will help to control electrical devices via the Internet, as the user can be outside the home.

2- This application will help to clarify faults in electrical devices, for example the television does not work.

3- This application will help you to control the lighting in the house and help to reduce the use of electricity.

4- This application may help people with special needs because it will enable them to control home without the need to move and making effort.

**Key deliverables:**

This project will enable people to control their home devices even when they’re outside and will help ones with disabilities and special needs.

**Project milestones:**

* Requirements review: Requirements specifications are complete, correct, approved and suitable. By 1/12/2021
* Critical design review: Detailed designs fully implement the system architecture, are approved and are suitable for input into the development of code. By 1/12/2021.
* System test review: The software product has passed system testing and is suitable for input into acceptance testing.by 21/4/2022

**Project resources:**

**Staff**: 2 Android developers

2 iOS develope

1 Back-end developer

**Hardware**: 5 laptops-sensors-Smart Hubs- Wi-Fi network- Microphones.

**Budget:**

* Budget allocated for this project is 600000 L.E (including servers, devices, developers and training).

**Constraints:**

* This project must be delivered within the specified budget.
* This project must be delivered on 1/6/2022.
* Any laptops or computers needed must be bought from dell or apple companies.

**Assumptions (required event must be occur every fixed period):**

* All team members continue to the end of the project
* Work as one team until we find the target.
* The right environment will be available for this project.
* Team will get all resources required.

**High level risks :**

1. Incorrectly planning.
2. hackers
3. Walk away from the target.
4. One of our employee leave the company
5. Choosing incorrect tools and technology
6. lost the trust of the clients.

# **Project Scope**

# **Project Scope Description:**

This project will mostly target the elderly and people with special needs, but it will also be available to all people to facilitate their working life.

This project will start with local country then spreading worldwide.

# **Project Acceptance Criteria:**

1. Installation of the developed system at the actual location.

2. Creating the right remote control (application) to control devices easily.

# **Project Deliverables:**

# Application which is connected to the Smart Hub

1. Project plan, reports, documents and resources which return to the company.

# **Project Exclusions:**

One of customers’ requirements that the app must work without using internet, but the sponsor and manager refuse this request as it need a lot of time and cost.

# **Project Assumptions:**

1. Availability of all required resources.
2. The existence of the financier of the project and the availability of budget.
3. This application can run only on The IOS and Android operating system.

# **Project Constraints:**

* This project must be delivered within the specified budget.
* This project must be delivered on 1/6/2022
* Any laptops or computers needed must be bought from dell or apple companies.
* Rules of company and policies.

**Work Breakdown Structure**

1. **Start of the Project**
   1. Client meeting for asking requirements
   2. Meeting with team members to check the feasibility of the project Home automation
   3. Client meeting for discussing risk and threats associated with the project
   4. Planning
   5. Studying the project
2. **Developing**
   1. Buying compatible devices
   2. Integrating them with each other
   3. Developing a central control system
   4. Testing for any vulnerabilities
3. **DESIGN AND IMPLEMENTATION**
   1. Building the power supply
   2. Communication between Smart Hub and mobiles
   3. Programming the Smart Hub
   4. Testing the complete design
4. **Implementation**
   1. Installation of devices
   2. Adjusting the system to the real world
   3. Final testing
5. **Training and Handling Over**
   1. Training client
   2. Handling over of security information (keys/password)
   3. Describing polices
   4. Finalizing Project
   5. Final report
   6. Closing of project

**WBS Dictionary**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **ID** | **Work Package Name** | **Description** | **Person** | **Start date** | **End date** |
| 1 |  | **Start of the Project** | Ibrahim Shaaban | **15 \ 11 \2021** | **10\12\2021** |
| 1.1 | Requirements | Client meeting for asking requirements | Ahmed Gamal | 15 \ 11 \2021 | 30 \11\2021 |
| 1.2 | Members | Meeting with team members to check the feasibility of the project Home automation | Ahmed Saad | 17 \ 11 \2021 | 15\12\2021 |
| 1.3 | Threats | Client meeting for discussing risk and threats associated with the project | Ahmed Gamal | 20 \ 11 \2021 | 11\12\2021 |
| 1.4 | Planning | Planning | Ibrahim Shaaban | 16 \ 11 \2021 | 15\12\2021 |
| 1.5 | Studying | Studying the project | Abanob Essam | 20\11\2021 | 1\12\2021 |
| 2 |  | **Developing** | Abanob Essam | **1\12\2021** | **14\1\2022** |
| 2.1 | Buying | Buying compatible devices | Ahmed Harres | 1\12\2021 | 14\12\2021 |
| 2.2 | Integrating | Integrating them with each other | Ahmed Gamal | 14\12\2021 | 28\12\2022 |
| 2.3 | Control-System | Developing a central control system | Ahmed Harres | 14\12\2021 | 7\1\2022 |
| 2.4 | Testing | Testing for any vulnerabilities | Ahmed Saad | 7\1\2022 | 14\1\2022 |
| 3 |  | **DESIGN AND IMPLEMENTATION** | Ahmed Khaled | **14\1\2022** | **28\2\2022** |
| 3.1 | Power-Supply | Building the power supply | Ahmed Gamal | 14\1\2022 | 7\2\2022 |
| 3.2 | MicroController | Commuication between Smart Hub and mobiles | Abanob Essam | 14\1\2022 | 14\2\2022 |
| 3.3 | Programming | Programming the Smart Hub | Ibrahim Shaaban | 14\1\2022 | 7\2\2022 |
| 3.4 | Design | Testing the complete design | Ahmed Saad | 14\2\2022 | 28\2\2022 |
| 4 |  | **Implementation** | Ahmed Harres | **1\3\2022** | **1\4\2022** |
| 4.1 | Installation | Installation of devices | Ahmed Harres | 1\4\2022 | 14\4\2022 |
| 4.2 | Applying | Adjusting the system to the real world | Ahmed Khaled | 14\4\2022 | 21\4\2022 |
| 4.3 | Final-testing | Final testing | Ibrahim Shaaban | 21\4\2022 | 1\4\2022 |
| 5 |  | **Training and Handling Over** | Ahmed Gamal | **1\4\2022** | **1\6\2022** |
| 5.1 | Training | Training client | Ahmed Khaled | 1\4\2022 | 14\4\2022 |
| 5.2 | Secuirty | Handling over of security information (keys/password) | Ahmed Saad | 1\4\2022 | 21\4\2022 |
| 5.3 | polices | Describing polices | Abanob Essam | 21\4\2022 | 7\5\2022 |
| 5.4 | Finalizing | Finalizing Project | Ahmed Gamal | 7\5\2022 | 21\5\2022 |
| 5.5 | Report | Final report | Ibrahim Shaaban | 7\5\2022 | 14\5\2022 |
| 5.6 | Closing | Closing of project | Ibrahim Shaaban | 2\5\2022 | 1\6\2022 |

**Responsibilities Matrix**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Task\Member** | **Ibrahim Shaaban** | **Ahmed Harres** | **Ahmed Khaled** | **Ahmed Saad** | **Ahmed Gamal** | **Abanob Essam** |
| **A**- Buying compatible devices | R | A | A |  | C |  |
| **B**- Integrating Devices with each other |  | R | A | A |  | A |
| **C**- Developing a central control system | A |  |  |  | R |  |
| **D**- Testing for any vulnerabilities | C | R | A |  | A | A |
| **E**- Building a power supply |  |  |  | C |  | R |
| **F**- Communication between Smart Hub and mobiles | A |  | R |  |  |  |
| **G**- Programming the Smart Hub |  |  |  | R |  | C |
| **H**- Testing The Complete Design | R | A | A | A | C | A |
| **I**-Installation of devices | C | R | A | A | A |  |

R: Responsible C: Consultant

A: Assistant

**Network**

Project Network

**Id description preceding activity Duration**

**A Buying compatible devices none 2**

**B Integrating them with each other A 2**

**C Developing a central control system A 3**

**D Testing for any vulnerabilities B, C 1**

**E Building a power supply D 3**

**F** **Communication between Smart Hub and mobiles D 4**

**G Programming the Smart Hub D 3**

**H Testing The Complete Design E, F, G 2**

**I Installation of devices H 2**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |  |
| --- | --- | --- |
| 2 | B | 4 |
| 1 | Integrating them with each other |  |
| 3 | 2 | 5 |

|  |  |  |
| --- | --- | --- |
| 5 | D | 6 |
| 0 | Testing for any vulnerabilities |  |
| 5 | 1 | 6 |

|  |  |  |
| --- | --- | --- |
| 6 | E | 9 |
| 1 | Building a power supply |  |
| 7 | 3 | 10 |

|  |  |  |
| --- | --- | --- |
| 6 | F | 10 |
| 0 | Communication between Smart Hub and mobiles |  |
| 6 | 4 | 10 |

|  |  |  |
| --- | --- | --- |
| 10 | H | 12 |
| 0 | Testing The Complete Design |  |
| 10 | 2 | 12 |

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|  |  |  |
| --- | --- | --- |
| 12 | I | 14 |
| 0 | Installation of devices |  |
| 12 | 2 | 14 |

|  |  |  |
| --- | --- | --- |
| 0 0 | A | 2 |
| 0 | Buying compatible devices |  |
| 0 | 2 | 2 |

|  |  |  |
| --- | --- | --- |
| 2 | C | 5 |
| 0 | Developing a central control system |  |
| 2 | 3 | 5 |

|  |  |  |
| --- | --- | --- |
| 6 | G | 9 |
| 1 | Programming the Smart Hun |  |
| 7 | 3 | 10 |

The Critical Path: **A** -> **C** -> **D** -> **F** -> **H -> I**

**Resource Constrained Table**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ID** | **RES** | **DUR** | **ES** | **LF** | **SL** | **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** |
| **A** | **4** | **2** | **0** | **2** | **0** | **4** | **4** |  |  |  |  |  |  |  |  |  |  |  |  |
| **B** | **4** | **2** | **2** | **5** | **1** |  |  | **4** | **4** |  |  |  |  |  |  |  |  |  |  |
| **C** | **2** | **3** | **2** | **5** | **0** |  |  | **2** | **2** | **2** |  |  |  |  |  |  |  |  |  |
| **D** | **4** | **1** | **5** | **6** | **0** |  |  |  |  |  | **4** |  |  |  |  |  |  |  |  |
| **E** | **2** | **3** | **6** | **10** | **1** |  |  |  |  |  |  | **2** | **2** | **2** |  |  |  |  |  |
| **F** | **2** | **4** | **6** | **10** | **0** |  |  |  |  |  |  | **2** | **2** | **2** | **2** |  |  |  |  |
| **G** | **2** | **3** | **6** | **10** | **1** |  |  |  |  |  |  | **2** | **2** | **2** |  |  |  |  |  |
| **H** | **6** | **2** | **10** | **12** | **0** |  |  |  |  |  |  |  |  |  |  | **6** | **6** |  |  |
| **I** | **5** | **2** | **12** | **14** | **0** |  |  |  |  |  |  |  |  |  |  |  |  | **5** | **5** |
| **Total Resource Load** | | | | | | **4** | **4** | **6** | **6** | **2** | **4** | **6** | **6** | **6** | **2** | **6** | **6** | **5** | **5** |
| **Resource Available** | | | | | | **6** | **6** | **6** | **6** | **6** | **6** | **6** | **6** | **6** | **6** | **6** | **6** | **6** | **6** |

**Baseline Budget**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ID** | | **DUR** | **Task** | **Budget** | **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** |
| A | **2** | | Buying compatible devices | 100 | 60 | 40 |  |  |  |  |  |  |  |  |  |  |  |  |
| B | **2** | | Integrating Devices with each other | 20 |  |  | 10 | 10 |  |  |  |  |  |  |  |  |  |  |
| C | **3** | | Developing a central control system | 30 |  |  | 15 | 10 | 5 |  |  |  |  |  |  |  |  |  |
| D | **1** | | Testing for any vulnerabilities | 10 |  |  |  |  |  | 10 |  |  |  |  |  |  |  |  |
| E | **3** | | Building a power supply | 60 |  |  |  |  |  |  | 30 | 20 | 10 |  |  |  |  |  |
| F | **4** | | Communication between Smart Hub and mobiles | 60 |  |  |  |  |  |  | 20 | 15 | 15 | 10 |  |  |  |  |
| G | **3** | | Programming the Smart Hub | 45 |  |  |  |  |  |  | 15 | 15 | 15 |  |  |  |  |  |
| H | **2** | | Integration | 40 |  |  |  |  |  |  |  |  |  |  | 20 | 20 |  |  |
| I | **2** | | Installation of devices | 60 |  |  |  |  |  |  |  |  |  |  |  |  | 30 | 30 |
| **Total** | | | | 425 | 60 | 40 | 25 | 20 | 5 | 10 | 65 | 50 | 40 | 10 | 20 | 20 | 30 | 30 |
| **Commutative** | | | | | 60 | 100 | 125 | 145 | 150 | 160 | 225 | 275 | 315 | 325 | 345 | 365 | 395 | 425 |

**Risk Management & Monitoring**

* + 1. **Incorrectly planning**

We can solve this following four steps:

1. Review problem statements.

2. List possible solutions for each real cause of the problem.

3. Weigh the good side and bad side of each possible solution.

4. Select the best solution.

* + 1. **Hackers**

We can stand against hackers’ attacks by building a strong security system.

* + 1. **Increase in the cost**

Sometimes cost of the manufacturing the product may raise in a way that van lead to large losses .We can solve this by looking for a cheaper resources with the same efficiency or raising the price of the product without a big void from competing products.

* + 1. **One of our employee leave the company**

1. Ask him for the reason he left for and try to fix it.
2. Search quickly for a high-quality employee to take his place.
   * 1. **Choosing incorrect tools and technology**

You need to look for someone who can help you identify the IT infrastructure you need that will support your business today and can help you plan for the future at the same time.

**6. lost the trust of the clients**

We can solve this by:

### Determine the source of the problem.

### Doubling down on the quality of your customer service

### Give your customers an offer they can’t refuse

### Offering an additional incentive.

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**Thank You**