# Internet of Things: Project 1: Worth 15%

**Demonstrations to take place the week of 21st of March 2021**

**Team and Individual Reports to be submitted by 26th of March 2021**

Teams are required to produce a prototype of an application which uses the Arduino to solve a “real-world” problem. The prototype will consist of some working Arduino software and some hardware. Teams will be required to demonstrate their application.

**Team Report** should include the following:

* Project Title
* Your name(s) & email addresses
* Links to:
* Trello Page
* GitHub Team Page
* Links to any data gathered or data analysis planned
* Outline of the problem to be solved - supported by your research [1 page + references (font size 12)]
* Summary of the Project solution [2 pages]
* List of Project Requirements [outline at least 6 requirements]
* Initial Design – to include sketches of proposed device, proposed code design, proposed hardware setup, description of any APIs or data processing planned
* Implementation Plan to include equipment needed, parts list, APIs to be used, code samples [3 pages + screenshots/photos/diagrams]
* Testing approach – how did you plan your software and hardware testing as well as evidence of tests carried out
* Security Analysis to prevent security holes [half page]
* Future improvements planned and potential next steps in developing the idea further [1 page]

Teams must use **Trello** to help manage their design process.

Teams are required to upload their code to a team repository in **GitHub**.

In addition individuals must submit an **Individual Report**, to outline what your role in the project was, what you learned from a technical point of view, and also what you learned about working on a group project, any challenges you encountered and how you went about getting past these challenges.

**Marking Rubric**

**Team Marks 15%**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Outstanding** |  | **Satisfactory** |  | **Unsatisfactory** |
| GitHub Page Used  3% | Code is in the team GitHub page. A readme.md file exists which explains the project. There have been a number of commits, which have appropriate messages. The students clone or download from the GitHub repo to demonstrate their project. Each team member has used the repository. The team have a good way of working with GitHub |  | There is code in the team GitHub page and the students can download or clone this code to demonstrate their project.  There have been a number of commits.  A readme.md file exists which explains the project. |  | The team GitHub page is not used. |
| Project Idea and Process  2% | The idea is a good idea which is suited to an IoT application. The team have a good story behind the idea. The team have used Trello to document their ideas and it shows the flow from ideas through to coding. |  | The idea is suited to an IoT application.  The team have used Trello to some extent. |  | The idea has been lifted straight from somewhere else and the team’s Trello board does not exist or has very few entries. |
| Report  10% | The report looks professional, it has proper formatting (headings, table of contents, headers and footers) and has followed the template and gives good information with interesting details. Effective use of images and/or videos to show functionality. |  | The report mostly follows the template but is missing some sections or gives poor or misleading information.  One or two images or videos included, but little context provided. |  | The report is not submitted or has major sections missing. |
| Code and Demonstration  5% | The code and demonstration work well and the code has been adapted to some extent. The code uses the internet either as a web service or as a client. The product either uses a web service not covered in class or it has the Arduino acting a server and has a good HTML interface. |  | The student’s code works to an extent. There is some use made of the internet. However it is very similar to existing code and has not “been made their own” or the demonstration indicates that the team don’t really understand what they are doing. |  | The team are unable to get anything working and the code submitted has real problems |

Individual Marks 10%

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Outstanding** |  | **Satisfactory** |  | **Unsatisfactory** |
| Individual Report  10% | The report looks professional, has followed the template and gives good information about their active role within the project. The student demonstrates good reflective skills in the report. |  | The report mostly follows the template but is missing some sections or gives poor or misleading information.  The report has some reflection but it lacks detail. |  | The report is not submitted or has major sections missing. |
| Evidence of contribution to team. 10% | The student has a good attendance record. They have contributed to the team git page and the team Trello page. They fully understand the project and have taken an active role. The project is substantial. |  | The student’s attendance is patchy or they attended but have not clearly contributed to the project. |  | The student did not attend most classes and there is no evidence of them contributing to the team’s work. |