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| **Group** 27 | Item Tracker |
| **Major:** | **Team members:** |
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**Design Functionality**

*Blue text (like this) should be removed from your submission. Summarize the major functions the product must perform. Organize the description to make them understandable to as many readers of your document as possible. At the very least, the readers should understand what functions are being provided, how they relate to one another, and how they relate to the problem product perspective earlier given. Pictures and diagrams are appropriate. Starting with a top-level functional flow diagram that is then narrated in an enumerated format is recommended. At a minimum, provide a bulleted list of ALL major functions the system will perform.*

1. Wi-Fi positioning

Using open source tools, such as Redpin, we will construct a Wi-Fi fingerprint for the tracker with room level accuracy. This system functions based on symbols, instead of geographic coordinates, to represent mappings of location. The position is calculated based on the signal strength of the tracker from adjacent wireless devices and the stored information of these devices to create a network of positions of reference. The system works based on two major components, a network sniffer to locate objects and a location database with algorithms to locate stored objects.

1. Application communication

<< Diagram and/or description of functionality >>

1. Surface adhesion

The tracker shall be able to attach to the surface of various objects and remain attached to the object until the user removes it from the object. While on the object, the tracker will remain in contact of the object to ensure that the tracker’s application can obtain accurate data of the object being tracked. The tracker must also be able to be removed from the object by the user. The tracker, when not attached to an object to track, shall be able to be attached to an object that the user chooses to track.

1. Notification/alarm

<< Diagram and/or description of functionality >>

1. User input

<< Diagram and/or description of functionality >>

1. Replaceable power source

The tracker will be able to accept a battery as a power source. The tracker’s battery compartment shall also be accessible with aid of a tool (screwdriver) to remove the spent power source and subsequently replace it with a new power source. The battery compartment shall also be able to be closed and sealed for completeness of installation of a new power source.

1. Minor damage resistance

The tracker’s hardware will be encased in a housing to protect the device from damage. The housing will be designed around the tracker to ensure the least amount of movement of the device while inside of the housing. The housing will be able to open and close for minor maintenance by the user. When closed, the tracker’s housing will be sealed to prevent the entering of outside particles and fluids into the housing. In addition, the housing will have a rubberized external coating to enhance the shock absorbing quality of the casing to further protect the tracker’s hardware.