Lesson Title: Types of RFID Tags

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Rationale

Why is this lesson important? Why does the student need this lesson? How does this lesson fit in the larger module?

There are different types of RFID tags. The student needs this lesson to understand the different types of tags.

Objective(s)

What will the student know, be able to do, and value at the end of this lesson? This is smaller amounts of information than the module objectives.

The student will be able to describe the differences between active, passive, and semipassive tags.

Exploration

Explicit concepts related to the Module goal are explored. It is at this point that the student will be provided basic information about the topic and the chance to explore some basic concepts about the topic. This is where the instructor imparts information.

- Active tags
  - Internal power supply (battery)
  - The internal power supply powers the tag’s circuitry and the transmitter
- Passive tags
  - No internal power supply (no battery)
  - Harvest the radio frequency (RF) to power the tag’s circuitry
  - Use backscattering communication instead of a transmitter to modulate and reflect the RF from the reader
- Semipassive tags
  - Hybrid of active and passive tag
  - Battery powers the tag’s circuitry
  - Use backscattering communication instead of a transmitter
  - Greater sensitivity than passive, therefore longer read range
  - Smaller amount of time to power on

Reflection

Several questions are posed to the student to answer and then often discuss as a class. This is an attempt to determine whether the student "gets" the basic concepts delivered above. If they do get it, move on to engagement. If they do not get it, go back to exploration above. It could be as simple as asking a few probing questions or as complex as asking the student to write a paper.

- What is an active tag?
- What is a passive tag?
- What is a semipassive tag?
Engagement
Concepts learned in the Exploration are further developed by conducting experiments, designing and building solutions, and solving problems. This is an attempt to cause the student to apply the new knowledge. By applying the new knowledge, the student is much more likely to retain this information. This engagement could be accomplished through a debate, an experiment, a problem solving activity, or anything else that would cause the student to demonstrate understanding and competence.

- Why do you suppose automobile toll roads use semipassive tags?

Expansion
Provide opportunities for students to expand the concepts to more general or global situations including connection to the Module goal. Expand back to the big ideas of the module and prepare for the next lesson.

- Which type of tag would be best for ThingNet?

Lesson Assessment
Assess student understanding of the lesson content. This does not have to be a full-blown examination. It could be a graded homework assignment, a quiz, a performance examination, a graded problem solving activity, or something similar.

- Exam problem

Equipment
- None

Software
- None

References
- None
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