# Abstract

An abstract is a brief, comprehensive summary of the contents of the Senior Project Report; it allows readers to survey the contents of report quickly and, like a title, is used by abstracting and information services to index and retrieve reports.

A well-prepared abstract can be the most important paragraph in your report. The abstract needs to be dense with information but also readable, well organized, brief, and self-contained. A good abstract is

Accurate: Ensure that an abstract correctly reflects the purpose and content of the report. Do not include in abstract information that does not appear in the body of the report.

Self-contained: Define all abbreviations (except units of measurement) and acronyms. Define unique terms. Paraphrase rather than quote.

Concise and specific: Make each sentence maximally informative, especially the lead sentence. Be as brief as possible. Abstract should not exceed 960 characters and spaces, which are approximately 120 words. Begin the abstract with the most important information (but do not waste space by repeating the title). This may be the purpose, or perhaps the results and conclusions. Include in the abstract only the four or five most important concepts, findings, or implications.

Ways to conserve characters: a) Use digits for all numbers, except those that begin a sentence; b) Abbreviate literally (e.g., use *vs.* for *versus*); c) Use active voice (but without the personal pronouns *I* or *we*).

Non-evaluative: Report rather than evaluate; do not add to or comment on what is in the body of the report.

Coherent and Readable: Write in clear and vigorous prose. Use verbs rather than the noun equivalents and the active rather than the passive voice. Use the present tense to describe results with continuing applicability or conclusions drawn; use past tense to describe specific variables manipulated or tests applied.

**Make sure you addressed the following**:

1. Make sure that you **do not use first tense** (for example: my project).
2. Include the purpose of the project as the first sentence.  The purpose of this project is …
3. Include the methodology of the project. To accomplish the objective the following methodology was used…
4. Include the conclusion of the project.  The project was successful …
5. Include future recommendation for expansion.

The purpose of this project is to design and implement, and build an RFID based system to replace the current employee time tracking system for used by the company J2 Innovations for tracking employee work hours. To accomplish the objective, the following methodology was used: identify what is wrong with the previous system, design a better way to accomplish the same goal, implement the hardware and software systems to replace the old system, test the system, use the system. The project was successful in that it implemented convenience systems that the previous system didn’t have while being more usable in the traditional features. Possible future expansions include handling different time zones for international employees and other convenience features relating to employee management.

The purpose of this project is to design and implement an RFID based employee time tracking system for J2 Innovations, a building automation software company. The following hardware was used: ESP32 microcontroller, RFID scanner module, 3D printed case, IOT based system. The following software was used: Arduino IDE, NodeJS framework, Ractive library... The user experience was greatly improved and user complaints were reduced to nearly none. Possible future expansions include handling different time zones for international employees and other convenience features relating to employee management.

The purpose of this project is to design and implement an RFID based employee time tracking system for J2 Innovations, a building automation software company. The following hardware technologies were used: IOT enabled ESP32 microcontroller, RFID scanner module, 3D printing, WiFi AP device configuration. In addition, a variety of software was used: Arduino IDE, NodeJS framework, Ractive library, AM Charts library, MySQL database. The user experience was greatly improved and user complaints were reduced to nearly none. Possible future expansions include handling different time zones for international employees, generating reports and charts for management, and scheduling days off and vacations through the UI.