Software Requirements Specification

Generic Campus Tour

Version 1.2

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03/10/25

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Revision History

Name	Date	Reason For Changes	Version
	3/20	Origination	1.0
	3/30	Updating system feature description 3.1	1.1
	4/22	Addition of GUI screenshots	1.2

1. Introduction

1.1 Purpose

The purpose of this document is to outline the software requirements specification for the *Generic Campus Tour v1.1* software project. This document follows the IEEE standard for software requirements specification documents as defined in section **1.3 Document Conventions.**

The current software implementation that Wright State provides of a 3D mapping solution of the Wright State Dayton campus is inefficient. It provides the user lackluster options to get from one location to another as these options tend not to be the fastest route. The map is also limited in scope as the software only allows a user to travel between buildings rather than an implementation of room-to-room navigation.

The purpose of this project is to provide a 3D map of the Wright State Dayton campus that allows a user to efficiently find the fastest route between locations, the fastest route between locations within the scope of their uploaded semester schedule, and information about campus landmarks within a room-by-room basis rather than building-by-building.

1.2 Document Conventions

Generic Campus Tour is still in the process of being created, so all requirements listed in this document have been already satisfied. Any future updates to the software in terms of objectives or requirements will need to be stated and clarified in this document to provide consistency and for this document's usefulness.

Within this SRS document, certain typographical rules are followed for clarification that are as follows:

Bold: Within paragraphs, bold indicates the title of a certain section or subsection.
Italics: Within paragraphs, italics indicates the title of the project

Some technical information has also been included which is in regard to definitions, acronyms, and abbreviations, but this can be found within section **1.3 Definitions, Acronyms, and Abbreviations.**

1.3 Definitions, Acronyms, and Abbreviations

IEEE (Institute of Electrical and Electronics Engineers): IEE is the world's largest professional association advancing innovation and technological excellence for the benefit of humanity.

SRS Document (Software Requirements Specification Document): A complete description of
the behavior of the system to be developed.

1.4 Document Conventions

Citations are in IEEE Standard

1.5 References

[1] "Godot Docs – master branch," *Godot Engine documentation*. https://docs.godotengine.org/en/latest/

[2] "Bronify - LeBron James Music APP Online," *FF Beta Testing*, Nov. 2018. https://bronify.app/ (accessed Apr. 22, 2025).

[3] "Maps | Wright State University," *Wright.edu*, 2025. https://www.wright.edu/maps (accessed Apr. 22, 2025).

[4] B. Foundation, "Blender Documentation," *blender.org*. https://docs.blender.org/

[5] tesseract-ocr, "tesseract-ocr/tesseract," *GitHub*, Oct. 20, 2019. https://github.com/tesseract-ocr/tesseract

[6] "Convert PDF to Image using Python," *GeeksforGeeks*, Sep. 25, 2020. https://www.geeksforgeeks.org/convert-pdf-to-image-using-python/

2. Overall Description

2.1 Product Perspective

The Generic Campus Tour map is an interactive map of Wright State University. It is a self-contained product that is intended to be used in place of the current Wright State map navigation feature.

2.2 Product Features

- Navigation between at least two locations on Wright State campus, displayed as a path
- Option to select elevator instead of stairs for navigation path
- View points of interest on campus
- Display class schedule chronologically from user input
- Navigation path of classes in class schedule, displayed by day of the week

2.3 User Classes and Characteristics

There are four intended user classes:

- Current Wright State University students:
    - Students with classes on campus who want to see how to get from one class to the next
    - Students who participate in extracurricular activities that take place at different locations on campus
    - Students with on-campus jobs
- Potential future Wright State University students and their families

    - Prospective students planning a campus tour or who just want to gain familiarity with the buildings on campus
- Visitors to Wright State University
    - Guest speakers or visiting researchers from other universities who need to navigate to specific areas of the campus
- Anyone at Wright State University's campus interested in accessibility options for navigation

2.4 Operating Environment

The navigation map software has been tested on:

- Microsoft Windows
- Linux distributions

2.5 Design and Implementation Constraints

Generic Campus Tour was created in Godot and written in gdscript, so knowledge of this program and language will be necessary for further development.

2.6 Assumptions and Dependencies

Godot is an open-source game programming engine and frequently has updates. The *Generic Campus Tour* was developed using version 4.3.

3. System Features

This section describes the functional requirements of the map and the features it provides. System features are described in detail to help the future extension and testing of the system.

3.1 System Feature 1 – Generate Path Between Two Locations

3.1.1 Description and Priority

- ❖ The user can select two locations (Location I and Location II) on Wright State University's main campus, either by typing into the designated text boxes or clicking on the locations on the displayed map. The shortest path from Location I to Location II will be generated and displayed. This is a Very High priority feature. [Hey Sean, if you're reading this send one of us on slack a message]

3.1.2 Stimulus/Response Sequences

- ❖ The GUI panel on the left side of the screen pertaining to path generation using two manually selected locations consists of
  - ➢ Location I and Location II: Two editable text boxes where the user will enter the desired locations to navigate from and to.
  - ➢ Submit button: button that begins the pathing process between the entered locations.

- ❖ The user must select a location on the Wright State campus, either by clicking on Location I first or by typing the first location into the Location I text box.
- ❖ If typing the location, a dropdown box will appear as they are typing to suggest locations that match what they have typed so far. The user must then click on Location II and type in the second location, where the dropdown box will appear again as they are typing with suggestions. When two locations have been selected by the user, a path from location one to location two will appear in the right subpanel on the campus map.

3.1.3 Functional Requirements

REQ-1: Only locations on Wright State University's main campus may be selected.
REQ-2: The locations selected cannot be the same location.
REQ-3: Two locations must be selected.

3.2 System Feature 2 – Generate Path of Classes From Schedule

3.2.1 Description and Priority

- ❖ The user can paste in their class schedule from the Wings Express printable schedule page. If it is pasted in unaltered and contains at least 2 classes that take place on campus at a defined time, a path on the map will be generated from the earliest class to each subsequent class on a specified day. This feature is High priority.

3.2.2 Stimulus/Response Sequences

- Schedule Sorting: The GUI panel on the left side of the screen contains a button labeled "Import Schedule." When the user clicks on this button, a text box will appear prompting the user to paste their Wings Express printable schedule into the box. When the user pastes their schedule into the box and presses the enter key on their keyboard, the entered schedule will be sorted chronologically and will be displayed by day of the week in the box in the lower left corner of the screen.
- Schedule navigation: The user may click on the left or right arrow to navigate to the previous or next day to display that day's schedule, once a schedule has been entered and sorted as described above.

3.2.3 Functional Requirements

REQ-1: Locations must be at Wright State University.
REQ-2: The schedule must be directly pasted from copying from Wings Express without modification.
REQ-3: At least two classes in the schedule must be listed as "face-to face" or "flexible" with identifiable rooms and buildings. If the user does not enter at least two classes listed this way, no path will be generated and the classes will not be sorted or displayed.
REQ-4: Class times cannot overlap. If there is time overlap, a dialogue box will appear to alert the user that there is time overlap present.

3.3 System Feature 3 – View Points of Interest on Campus

3.3.1 Description and Priority

- The user can click on a point on the map, marked by the icon in the figure below. This will display the name of the point of interest and information about it in a popup box. This feature is High priority.

3.3.2 Stimulus/Response Sequences

- The user will select a point of interest by clicking on it with their mouse. Once clicked, the name of the point of interest will be displayed in a popup box, along with relevant information about the point of interest.

3.3.3 Functional Requirements

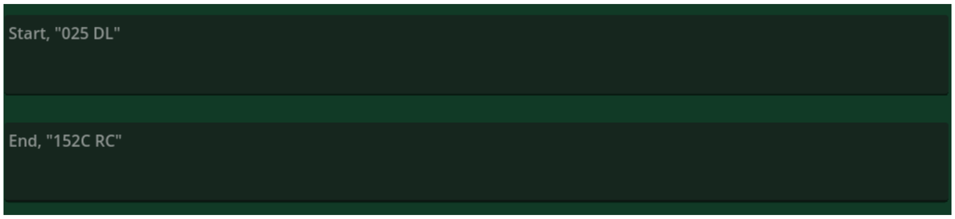
REQ-1: Location must be selected in order to display information
REQ-2: Location must be a pre-existing point, defined by the map

4. External Interface Requirements

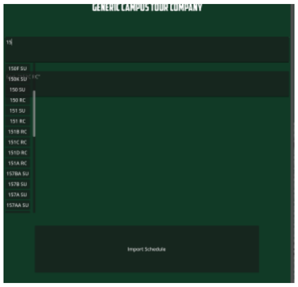
4.1 User Interfaces - GUI

The project was designed within the Godot editor with all functionalities of the GUI built inside the editor. The most common features of the program are the dropdown menu, schedule editor, and the main map scene where the map of the university and navigation can be viewed.

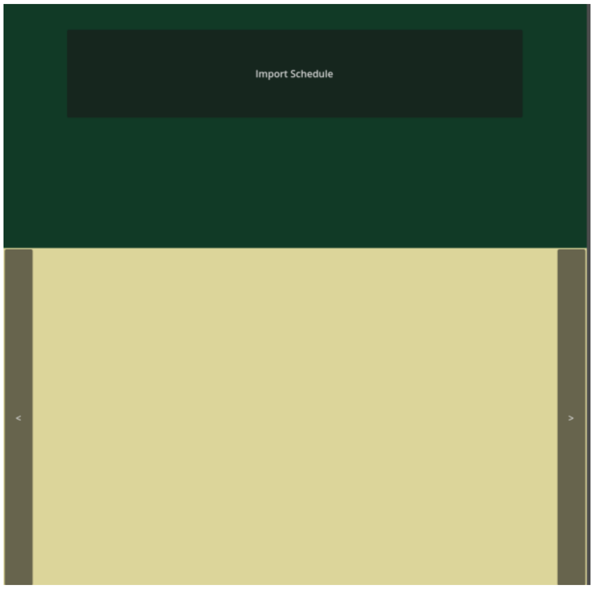
-Dropdown Menu No Information

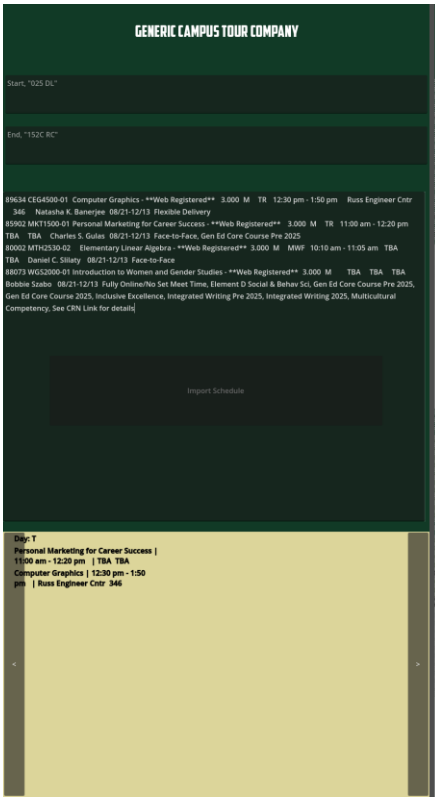


-Dropdown Menu With Information



-Schedule Editor





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   346     Natasha K. Banerjee  08/21-12/13  Flexible Delivery
85902 MKT1500-01  Personal Marketing for Career Success - **Web Registered**    3.000  M    TR   11:00 am - 12:20 pm
TBA    TBA    Charles S. Gulas  08/21-12/13  Face-to-Face, Gen Ed Core Course Pre 2025
80002 MTH2530-02    Elementary Linear Algebra - **Web Registered**  3.000  M    MWF   10:10 am - 11:05 am   TBA
TBA    Daniel C. Slilaty   08/21-12/13  Face-to-Face
88073 WGS2000-01 Introduction to Women and Gender Studies - **Web Registered**  3.000  M       TBA    TBA    TBA
Bobbie Szabo   08/21-12/13  Fully Online/No Set Meet Time, Element D Social & Behav Sci, Gen Ed Core Course Pre 2025,
Gen Ed Core Course 2025, Inclusive Excellence, Integrated Writing Pre 2025, Integrated Writing 2025, Multicultural
Competency, See CRN Link for details
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Day: T
Personal Marketing for Career Success |
11:00 am - 12:20 pm   | TBA  TBA
Computer Graphics | 12:30 pm - 1:50
pm   | Russ Engineer Cntr  346
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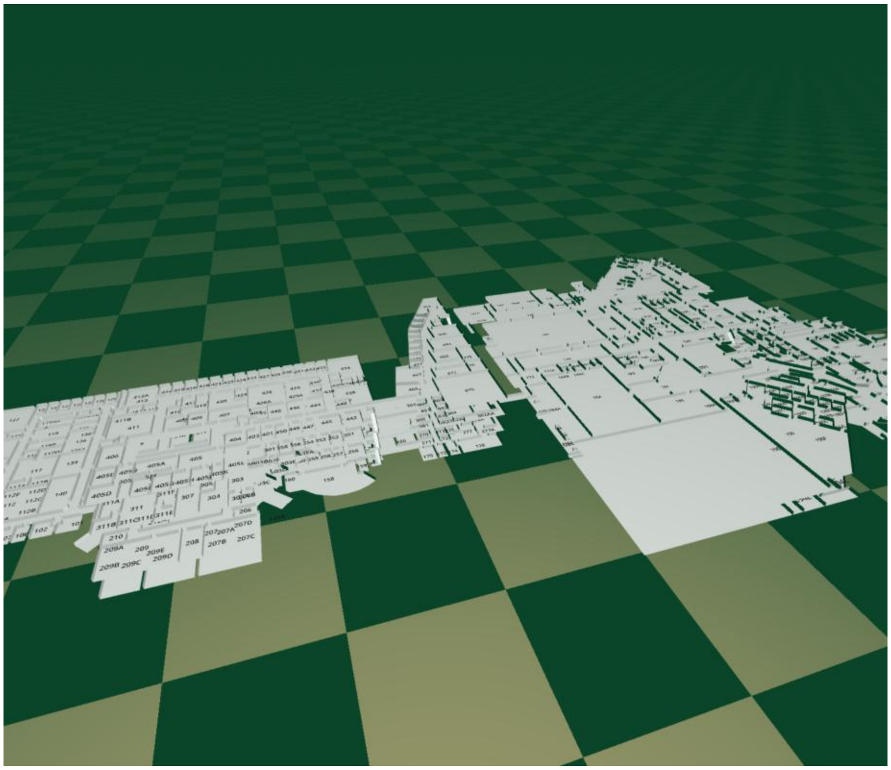
-University Map



4.2 Hardware Interfaces

N/A

4.3 Software Interfaces

All components of the project are self-contained withing the Godot executable. This indicates that no actual communication will be done with any outside software, libraries, etc. upon runtime of the application.

4.4 Communications Interfaces

Generic Campus Tour is not a web application but rather an executable that you can download off of the software's home website. The only communication necessary is to check the website for software updates.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

Generic Campus Tour is an application that in its current state requires few system resources to work. The design of the software is meant to be lightweight and the response time of the program is meant to be used in real-time.

Furthermore, it's important to note that future updates to the software will require the user to visit the *Generic Campus Map* website to install the most recent version of the software.

5.2 Safety Requirements

N/A

5.3 Security Requirements

There is no need to authenticate users, as they are all the same level. Data entered into the navigation fields is not saved, so no security level is introduced.

6. Key Resource Requirements

Major Project Activities	Skill/Expertise Required	Internal Resource	External Resource
Converting Floor Plans to x and y coordinate data and pulling name of locations	Python, Poppler, and Tesseract	Jimmie Cox (Part-Time)	David Kendrick (Facilities Manager | Part-Time)
Creating Map Meshes	Blender	Nick Heyart (Part-Time)	N/A
Demonstrating screen manipulation of what the user can see (Different devices)	Godot, GDScript	Jimmie Cox (Part-Time) and Nick Heyart (Part-Time)	N/A
Node navigation	Godot, GDScript	Nick Heyart (Part-Time)	N/A
Organization of Room Location for searching	Godot, GDScript, Data Structures	Jimmie Cox (Part-Time)	N/A
Importing schedule for room navigation	Godot, GDScript	Kristin Johnson (Part-Time)	N/A