Operational Specification Design

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| **Student** | Pisit Pisuttipunpong | **Date** | 19/12/2024 |
| **Program** | Program 5 | **Program #** | 5 |
| **Instructor** | Sakasit Ramingwong | **Language** | JavaScript |

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| **Scenario Number** | **1** | **User Objective** | Get numerical integral with Simpson rule | |
| **Scenario Objective** | | Calculate T distribution integral | | |
| **Source** | **Step** | **Action** | | **Comments** |
| User | 1 | Input x, degree of freedom | |  |
| User | 2 | Run Program 5 | |  |
| System | 3 | Perform Simpson Logic | |  |
| System | 4 | Output p (T distribution integral) | |  |
| User | 5 | Read program output | |  |
| User | 6 | Exit Program | | Thank you Program 5 😊 |
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Functional Specification Design

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| **Student** | | Pisit Pisuttipunpong | | **Date** | 19/12/2024 |
| **Program** | | Program 5 | | **Program #** | 5 |
| **Instructor** | | Sakasit Ramingwong | | **Language** | JavaScript |
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| **Variables** | | | | | |
|  | **Declaration** | | **Description** | | |
|  | Let num\_seg = 10 | | The initial number of segments | | |
|  | Let W = x/num\_seg | | The width of each segment | | |
|  | Let E = 0.00001 | | The minimum error for the Simpson value | | |
|  | Let dof | | Degree of freedom | | |
|  | Let x | | The position from 0 to x to find t distribution | | |
|  | Let F(x) | | T distribution function | | |
|  | Let p | | The integral of T distribution | | |
|  | | | | | |
| **Functions** | | | | | |
|  | **Declaration** | | **Description** | | |
|  | Function gamma\_function | | Calculate gamma function it like factorial | | |
|  | Function t\_distribution\_function | | Calculate T distribution F(x) | | |
|  | Function Simpson\_function | | The Simpson function p | | |

Logic Specification Design

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| **Instructor** | Sakasit Ramingwong | **Language** | JavaScript |

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| Pseudo Code |
| Setting Up the Simpson Variables |
| Iterate until the difference of first num\_segment and next num\_segment is below Error 0.00001 |
| Each Iteration |
| Compute T Distribution of F(x) |
| Calculating Simpson value p |
| If there is no previous Simpson value so continue this loop again |
| Calculating Error from previous Simpson value |
| Increase number of segment twice |
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