

# StrinGen - User Guide

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## 1. Introduction

StrinGen is an application that aims to facilitate the generation of NUS FASS ModReg strings (Boolean expressions) that specify module requirements. It generates a string based on the user's input into the GUI by adding parentheses and logical connectors. It also performs slight simplifications on the Boolean expression. While the application simplifies the string generation process through the GUI, the user still has to possess some knowledge of logical relationships and be careful when entering the requirements.

## 2. Quick Start

1. Ensure you have Java 11 or above installed in your Computer.
2. Download [stringen.jar](#) [here](#).
3. Double-click the file to start the app. The GUI should appear in a few seconds. If double-clicking does not work, either:
  - Open Command Prompt (Windows) or Terminal (Mac), navigate to the folder where you have downloaded the jar file and run `java -jar stringen.jar`

- Or follow the instructions [here](#) (Windows)

The screenshot shows the StrinGen application window. At the top, there's a 'COHORT' section with two dropdown menus: 'PR' (set to 'YEAR') and 'TO' (set to 'YEAR'). Below this is a 'REQUIREMENTS' section. It contains two requirement blocks. 'Requirement 1' has a 'REQUIREMENT' dropdown set to '-'. Below it, there's an 'AND' label followed by another 'REQUIREMENT' dropdown set to '-'. There are buttons for 'add AND' and 'add OR'. 'Requirement 2' also has a 'REQUIREMENT' dropdown set to '-'. Below it, there are buttons for 'add AND' and 'add OR'. At the bottom of the requirements section is a button labeled 'Add new requirement'. At the very bottom of the window, there are two buttons: 'Add another cohort' on the left and 'Generate string' on the right.

## 3. Fields

### 3.1. Cohort Field

To specify the range of cohorts for which the following requirements apply. Below describes the options that should be chosen for the various scenario.

- **No specific range:** **YEAR** (default) / -
- **All cohorts before and including** **SOME\_YEAR**: **YEAR** (default) / - **TO** **SOME\_YEAR**
  - E.g. Cohorts before and including 2013: - **TO** **2013**
- **All cohorts after and including** **SOME\_YEAR**: **SOME\_YEAR** **TO** **YEAR** (default) / -
  - E.g. Cohorts after and including 2013: **2013** **TO** -
- **All cohorts between** **YEAR\_ONE** **and** **YEAR\_TWO** (inclusive): **YEAR\_ONE** **TO** **YEAR TWO**
  - E.g. Cohorts between 2013 and 2015: **2013** **TO** **2015**
  - Eg. Cohort 2013: **2013** **TO** **2013**

### 3.2. Requirement Field

#### 3.2.1. Numbered Requirements

**REQUIREMENTS**

**Requirement 1**

REQUIREMENT ▾ -

add AND

add OR

**Requirement 2**

REQUIREMENT ▾ -

add AND

add OR

Add new requirement

Numbered requirements (e.g. Requirement 1, Requirement 2) have *sub-requirements* that are specified through dropdown boxes. These subrequirements can have *AND/OR* relationships that combine to form a greater (numbered) requirement. Each numbered requirement must be satisfied. If there are 3 requirements (Requirement 1, Requirement 2 and Requirement 3), this translates into a string equivalent to **Requirement 1 & Requirement 2 & Requirement 3**.

### 3.2.2. Sub-requirements

Sub-requirements are specified through the dropdown boxes. There are several different types of requirements to choose from, including:

- Module Prerequisite
- Course Prerequisite
- MC Prerequisite
- Major Prerequisite
- CAP Prerequisite
- A-Level Prerequisite
- Course Preclusion
- Module Preclusion
- Major Preclusion
- Concurrent Module (Specified module has to be taken concurrently)

Each type of requirement has different fields that has to be entered.

## IMPORTANT

### To Take Note

- The fields in square brackets [] are optional and do not have to be filled in/entered.
- Module, Course and A Level Subject Codes have to be keyed in manually. Users are assumed to have these information.
- *Code format:* The % symbol is used to represent *all values*. For example, all modules with module codes starting with HY should be written as HY%. This can be extended in other ways, such as HY1%, meaning all 1000 level HY modules.

### Module Prerequisite

**Fields:** module code and [minimum grade]

The minimum grade is set to be D by default if no grade is chosen.

### Course Prerequisite

**Fields:** course code

### MC Prerequisite

**Fields:** MC count and [module code]

### Major Prerequisite

**Fields:** major code

### CAP Prerequisite

**Fields:** CAP

### A-Level Prerequisite

**Fields:** subject code and minimum grade

### Course Preclusion

**Fields:** course code

### Module Preclusion

**Fields:** module code and [minimum grade]

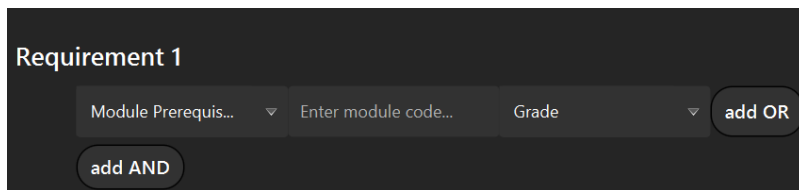
The minimum grade is set to be D by default if no grade is chosen.

### Major Preclusion

**Fields:** major code

## 4. Logic Buttons

### 4.1. Horizontal add OR button

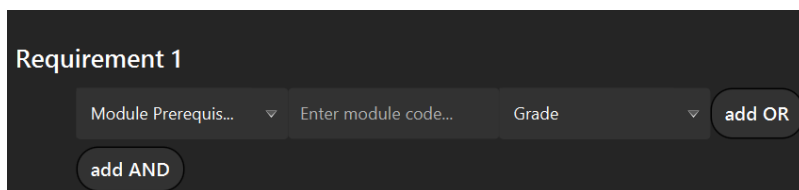


The screenshot shows a dark-themed form titled "Requirement 1". It contains three input fields: "Module Prerequis...", "Enter module code...", and "Grade". To the right of the "Grade" field is a button labeled "add OR". Below the "Module Prerequis..." field is a button labeled "add AND".

Most types of requirements have an additional **add OR** button that appears after the requirement type has been chosen. This allows the user to input more than one requirement of the same type.

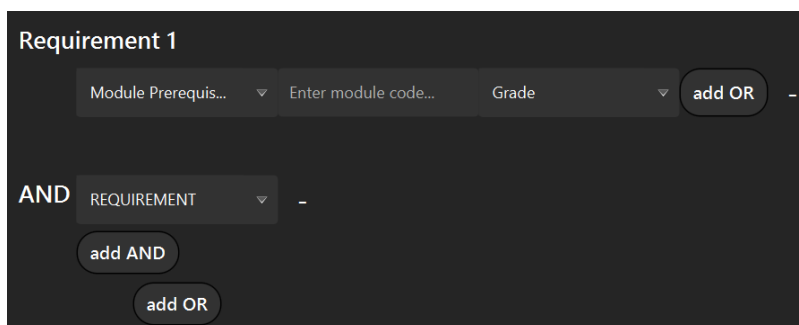
As the name suggests, clicking this button would indicate a logical **OR** relationship between each requirement along the same horizontal line.

### 4.2. Vertical add AND button



The screenshot shows the same "Requirement 1" form as above. In addition to the "add OR" button, the "add AND" button is now visible below the "Module Prerequis..." field.

Clicking this button would indicate a logical **AND** relationship between the requirement(s) above and the requirement(s) below.



The screenshot shows the "Requirement 1" form with a new section below the first one. This section is labeled "AND" and contains a dropdown menu labeled "REQUIREMENT". Below this dropdown are two buttons: "add AND" and "add OR".

### 4.3. Vertical add OR button

Clicking this button would indicate a logical **OR** relationship between **all the requirements between the newly-added OR and the previous OR (if any)** and the requirement(s) **above the previous OR** and **after the newly-added OR**.

The above example implies a relationship as such: (Module Prerequisite Requirement **AND** Module Preclusion Requirement) **OR** (MC Prerequisite Requirement).

**IMPORTANT** | Take note of the parentheses.

## 5. Others

### 5.1. Adding/deleting cohorts

The **Add another cohort** at the bottom left corner of the GUI allows the user to enter requirements for another cohort. The user can also delete the cohort by clicking the **DELETE COHORT** button at the top left corner, which only appears when the user has added at least one other cohort. The user can also toggle between cohorts using the **Back** and **Next** buttons at the bottom left corner.

### 5.2. Generating the string

The **Generate string** button at the bottom right corner of the GUI should only be clicked when the user has finished entering all the requirements. The user can use the **Copy to clipboard** button to copy the entire string. There will be a message below the string if the number of characters *exceeds 5000 characters*. The user can generate another string by clicking the **Generate another string** button.

### 5.3. Deleting requirements

The **-** buttons beside each requirement can be used to remove unwanted requirements.

## 6. Examples

The following are some examples on how to translate some requirements written in prose into logical statements.

- 40 MCs, **including** 20 MCs in HY modules and 20MCs in SC modules
  - Explanation: "including" suggests a logical **AND** relationship as all of these requirements must be fulfilled.

	MC Prerequisite	▼	40	Enter module prefix...	add OR	-
AND	MC Prerequisite	▼	20	HY%	add OR	-
AND	MC Prerequisite	▼	20	SC%	add OR	-
add AND						
add OR						

- Completed 80 MCs, including 28 MCs in SE or 28 MCs in MS or 28 MCs in SN, with a minimum CAP of 3.50.
  - The 80 MCs part has to be entered in a different numbered requirement from the 28 MCs in . . as the vertical OR is needed for the latter.

Requirement 1

MC Prerequisite	▼	80	Enter module code...	add OR	-
add AND					
add OR					

Requirement 2

MC Prerequisite	▼	28	SE%	add OR	-
add AND					
OR					
MC Prerequisite	▼	28	MS%	add OR	-
add AND					
OR					
MC Prerequisite	▼	28	SN%	add OR	-
add AND					
add OR					

Requirement 3

CAP Prerequisite	▼	3.5	▼	-
add AND				