

1 Program Structure

1.1 Components

- Graphic User Interface (Bokeh)
- Offline Data Set
- Online Database

1.2 Work Flow

- 1.2.1 Fetch data in interest from the online database when user input is detected
- 1.2.2 Update offline data set accordingly
- 1.2.3 Show GUI

2 Global Variable

2.1 *title_input, dept_input, refresh, btnGroupTitle, btnGroupDept, optionGroup, paragraph*

[Bokeh gadgets]

Essential GUI components that allows display and user interactions

2.2 *colors, gpa, years*

[list]

Saves possible choices for colors, gpa, and years

2.3 *STAdata*

[dict]

Saves GPA data retrieved from online data base

To provide source of stack GPA figure display

3 Functions

3.1 connectSQLServer(), fetchRows(*command*)

Fetches data rows from online database with SQL *command*

3.2 updateCourseData(*rows*)

Replaces source data for course info table with given data *rows*

3.3 refreshByButton(*new*), btnGroupLetters.on_click(refreshByButton)

Detects *btnGroupLetters* activation

Updates source data for course info *table* according to the selected initial letter

3.4 refreshByFilter(), refresh.on_click(refreshByFilter)

Detects *refresh* button activation

Updates source data for course info *table* according to the input text filter

3.5 updateStatistics(*attr, old, new*), deptSelect.on_change(*attr*, updateStatistics)

Detects *deptSelect* menu value change

Updates *STAdata* for stack bar plot *p*