Coursesv7 Documentation

Authors: Declan Holmes, Jonathon Hein, Sean Ackerley

Purpose:

Provide an easy and efficient means to populate the database for the ATAR calculator project with courses listed on the VTAC website, without the need for manual insertion.

Libraries:

- Selenium Client & WebDriver
  - URL: http://selenium-release.storage.googleapis.com/2.45/selenium-java-2.45.0.zip
  - JAR's to be included in build path:
    - Selenium-java-2.45.0-srcs.jar
    - Selenium-java-2.45.0.jar
- Selenium Server
  - URL: http://selenium-release.storage.googleapis.com/2.45/selenium-server-standalone-2.45.0.jar
  - JAR's to be included in build path:
    - Selenium-server-standalone-2.45.0.jar
- Com.mysql.jdbc_5.1.5

Installation Environment:

- The generated JAR for the project is expected to reside and execute on the machine in which the target MySQL server resides.
- The project is designed without a GUI, that is to say, it was created for an environment in which textual console output is supported.

Description of operation:

UpdateCourses.java:

- Starting point of the program.
- Navigates to VTAC website, performs course search with zero search parameters to retrieve a list of all courses currently offered.
- Searches the html source code for a defined pattern by which it identifies a course.
  - Once the identifying pattern is found a substring containing just the course code is created and entered into the arrayList courseNum.
  - This process repeats for the length of the page.
- For each course code in CourseNum arrayList:
  - Creates a new thread with a GetInfoRunnable object as its parameter.
  - Starts the thread.

    - Main thread sleeps for 50 milliseconds so as not to bombard the web server with requests.
    - Main thread joins to all created threads to ensure it doesn't continue until all threads have finished.
- Once all threads have finished, for each course in the courses arrayList uses the DBProcessor singleton object to enter the course into the database.

GetInfoRunnable class:

- Navigates to the URL given as a parameter.
- Performs the findName method
    - Searches the page source for anything that matches one of the name patterns defined in the class.
    - Returns the name of the course residing between the defined start pattern and defined end pattern.
- Performs the findUni method
    - Searches the page source for anything that matches the UNI name patterns defined in the class.
    - Returns the name of the institution residing between the defined start pattern and defined end pattern.
- Locates and processes the 'clearly in' ATAR if one exists.
- If course isn't a graduate course, course is added to the courses arrayList supplied as a parameter.

Course class:

- Encapsulates course data.
- Provides getter methods for access.

DBProcessor class:

- Singleton class, only one instance is allowed to exist at a given time. Accesses by other classes by means of the getInstance method.
- On construction, creates a connection to the database described in the MYSQL_LOC variable.
- EnterCourse method:
    - Takes a course as a parameter.
    - Calls the enterUni method.
    - Executes an insert operation containing the information provided in the course parameter on the courses table.
- EnterUni method:
    - Takes a course a parameter
    - Queries the UNI table for entries where name is equal to the institution name provided in the course parameter.
    - If the result set return from the above query returns nothing, inserts a new entry in the UNI table for that institution.

- Returns the uid for the institution.

Setup/Maintenance:

Given that the program is reliant on the format of a resource outside of our realm of control, maintenance is required for continued functionality. Many of the patterns used to identify the data this program hopes to gather are likely to change at some point or another, this may necessitate looking at page source code to find identifying features of desired data and updating the relevant pattern accordingly. Below is a list of the variables which are likely to require maintenance as well as their description.

Variables	Description
UpdateCourses class	
- COURSE_LINK	Identifies a course link in the search results page source. To extract just the relevant course code, a start index and end index are specified which define the substring.
- VTAC	Defines the address for the search page. Also used in the concatenated string supplied to a GetInfoRunnable thread to define the course web page to extract data from.
- MID_YEAR	Defines the 'mid-year' string for use during mid-year in take. Must be removed during the 'yearly' intake.
- COURSE_EX	Concatenated with the VTAC variable as well as relevant course code, to be supplied to a GetInfoRunnable Thread.
GetInfoRunnable class	
- BACH_PATTERN	A temporary variable used only for a single course in the list which did not follow the standard format.
- MONTH_PATTERN	Used to identify the starting point of an ATAR table.
- HE_PAT	Identifies courses that are have the HE classification.
- VET_PAT	Identifies courses that are have the VET classification.
- GRAD_PAT	Identifies courses that are have the GRAD classification.
- HEGRAD_PAT	Identifies courses that are have the HEGRAD classification.
- HEVET_PAT	Identifies courses that are have the HEVET classification.
- HEGET_PAT	Identifies courses that are have the HEGET classification.
- INST_PAT	Identifies institution name.
DBProcessor	
- MYSQL_LOC	Defines the database URL as well as its user and password.

		May need to be redefined in the event the program is used on a database where that information would be incorrect.
-	SQL_INSERT_COURSE	Defines the insert statement to be used to enter data into the course table. May need to be redefined in the event the structure of the database changes.
-	SQL_INSERT_UNI	Defines the insert statement to be used to enter data into the uni table. May need to be redefined in the event the structure of the database changes.
-	SQL_SELECT_ALL_UNI	Defines the select query for retrieving institutions from the uni table based on the name supplied by the relevant course. May need to be redefined in the event the structure of the database changes.

Switching between start of year, mid-year and archive modes:

- At the start of execution, the user is prompted for a single key input:
  - 's' for start of year mode.
  - 'm' for mid-year mode.
  - 'a' for archive mode.
- Selecting the wrong mode for the corresponding time of year may result in the program working incorrectly or not at all.

Steps for ensuring program is navigating to the search results page:

1. Ensure the VTAC variable in UpdateCourses.java correctly corresponds to the URL found (figure 2) when clicking on the 'CourseSearch' button (figure 1) on the VTAC website minus any extension (such as ?midYear=1).

   Figure 1.

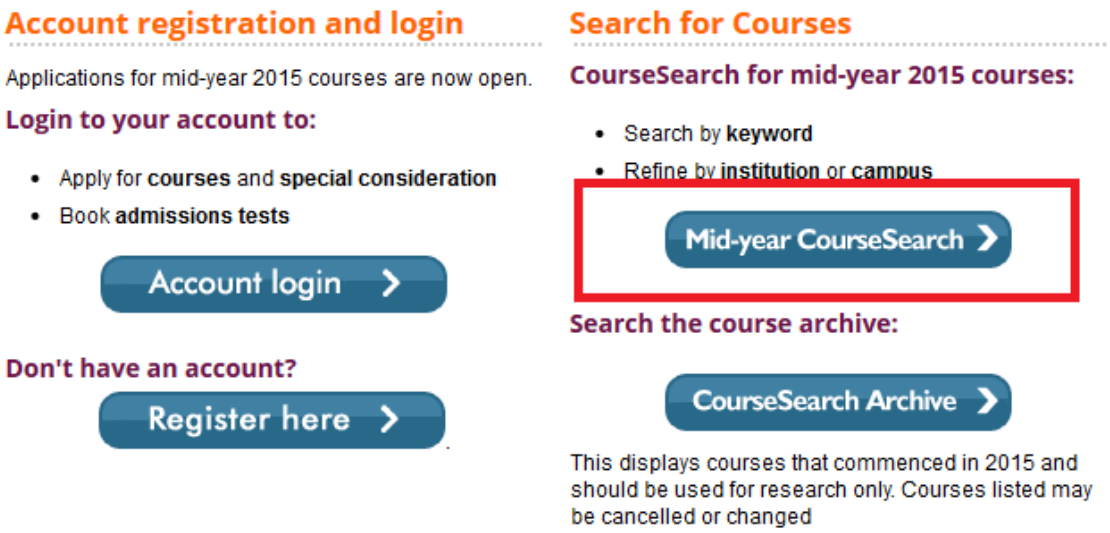
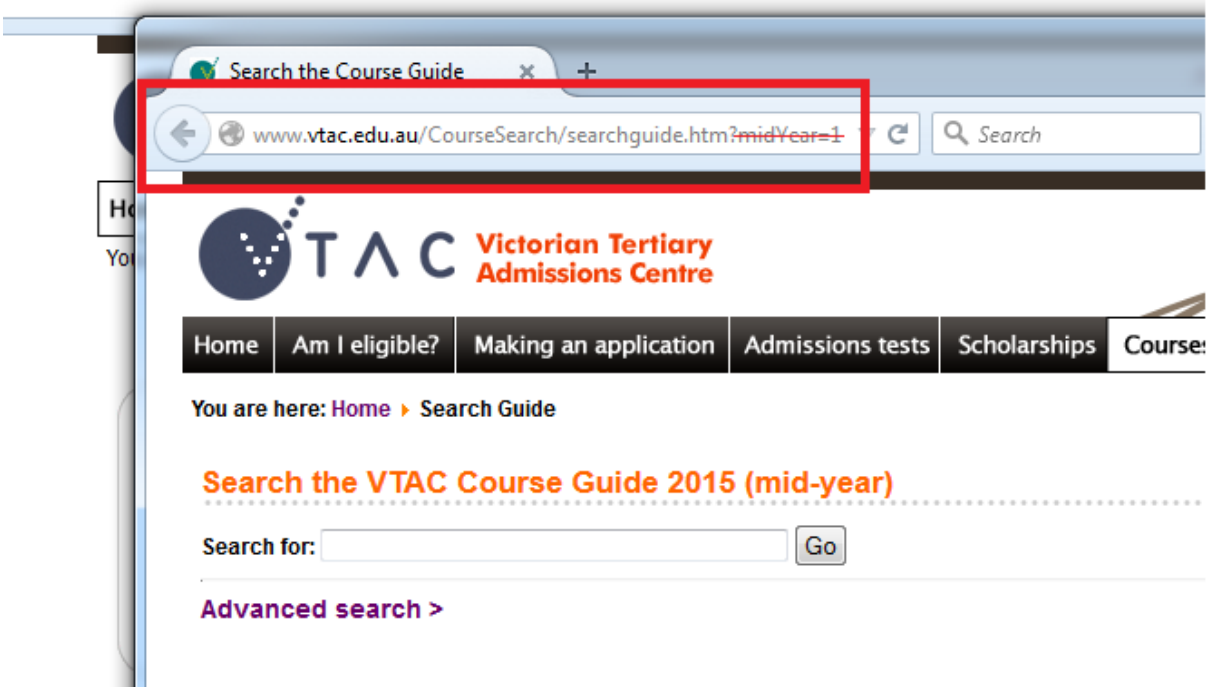
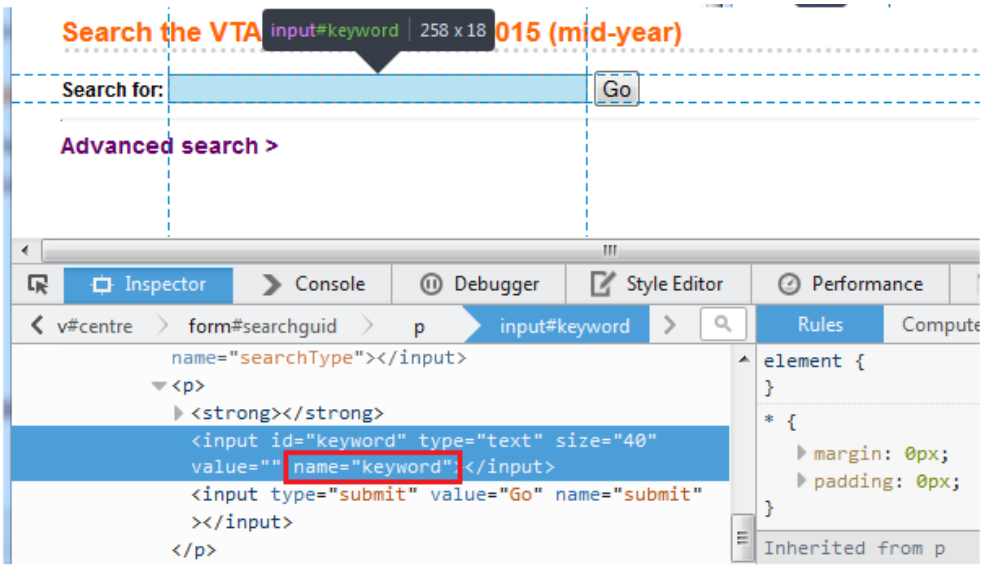


Figure 2. Displaying what the VTAC variable should be.



2. If it is currently mid-year, the MID_YEAR variable in UpdateCourses.java may require updating. The substring of the URL above crossed out above should be used as the value of this variable (?midYear=1).
3. The ARCH variable in UpdateCourses.java may also require updating. The means of doing so is the same as the above but clicking on the 'CourseSearch Archive' button in place of the normal current courses button.
4. If after confirming the above is correct the program presents the error message 'Search button element not found, ensure the SEARCH_BUTTON variable is set correctly by inspecting the text field in your browser (figure 3).

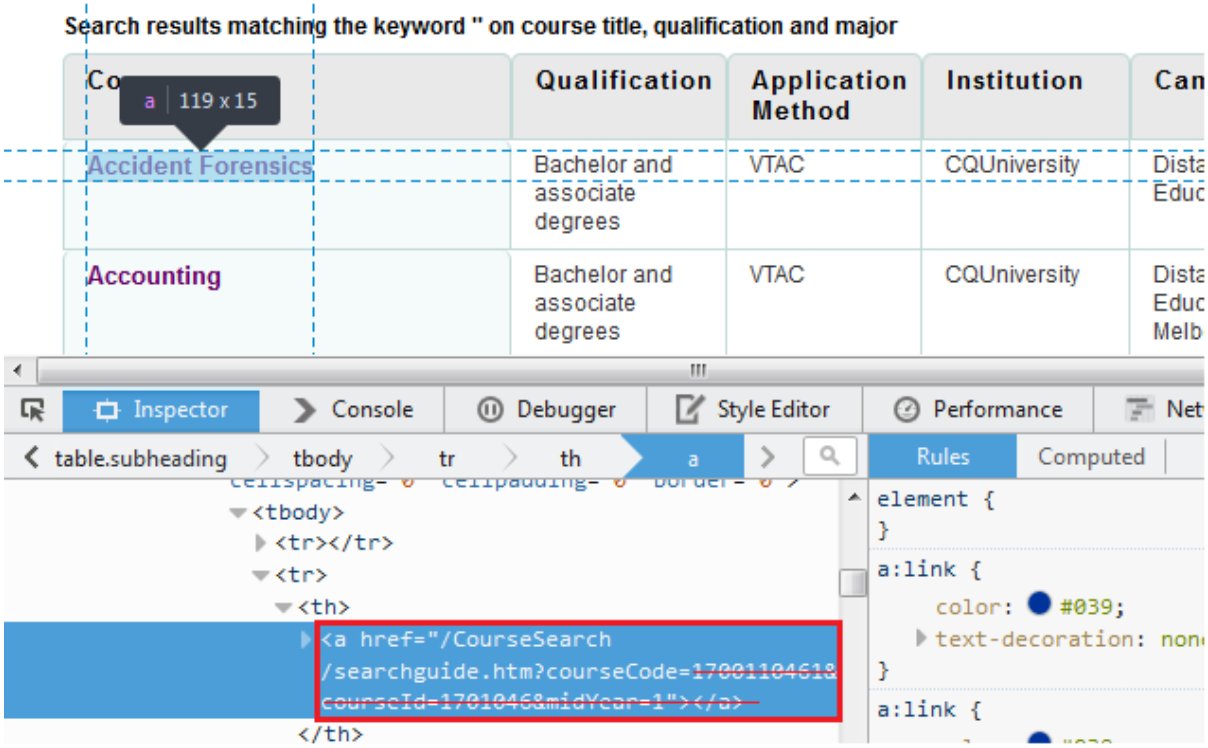
Figure 3.



Steps for ensuring the program will correctly identify courses listed from the output of the above:

1. Inspect any course element in the table returned by clicking the 'Go' button seen in figure 3. Set the COURSE_LINK variable in UpdateCourses.java to the identified link element (figure 4).

   Figure 4.



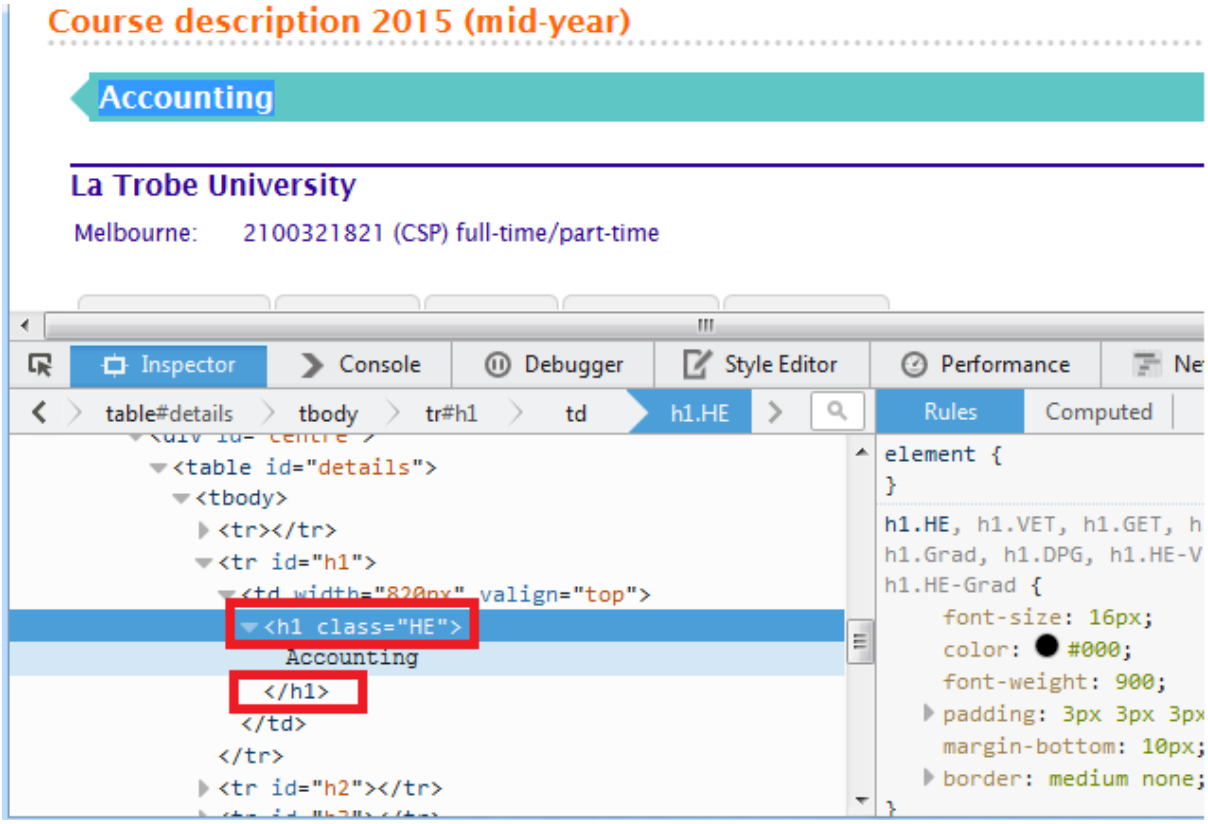
Ensuring 'field identifier variables' are correct in CoursesRunnable.java:

On any course page, there are a number of fields we are interested in (figure 5).

   Figure 5.

Each of these elements may be inspected to find its identifying features (figure 6).

Figure 6. Finding the enclosing features for identifying a desired field.



The above example displays the identification of a course name. ‘<h1 class=”HE”>’ identifies the start, and ‘</h1>’ identifies the end of the content desired. These strings are placed in the variables “HE_PAT” and “H1_END” respectively.

The above process applies to all desired fields identified in the ‘CoursesRunnable’ variable table (page 3).

ATAR Calculator Design Document

Brief:

The ATAR Calculator was designed as a single page web application for simplicity and immediate usability without need to navigate through superfluous links. The site will allow users to calculate an ATAR using a form presented on the main page.

divs:

main

The container for the entire page.

header

The title banner.

content_wrapper

Wrapper for the content div.

content

The main display div that is updated via AJAX.

footer

Navigation bar located at the bottom of the page.

Functions:

newXMLHTTP()

Return a new XMLHttp object.

function onLoad()

Instantiates the content div on load with calculator.php

function aboutDet()

Changes content div to display about.php

function contactDet()

Changes content div to display contact.php

function processCalc()

Calculates the ATAR rank using given input, and displays the results to content.

function adminLogin()

Allows an admin to login to the site and upload a new seed page.

Test.php technical documentation

Introduction: The intention of this document is to provide details and clarifications as to the purpose and details of the test.php script utilized in the ATAR calculator solution.

General Overview: The test.php script retrieves data from the database and returns it as an HTML table, based on some set of provided parameters.

Important variables:

Variable	Description
Atar	The score provided to the script. Is used in the retrieval of data from the database.
Offset	Used in determining what 'page' of data to return to the user.
Sort	Defines by what field the returned courses should be sorted (e.g. course name z-a).
Dir	Defines the direction that the field defined in sort should be.
Limit_by	Defines the field by which to apply refinement using a provided keyword.
Keyword	The keyword to use in the refinement of data. Applied to the field specified in limit_by.

Function Overview:

Function	Description
setRefinementStr	Sets the refinement string. Arguments provided are added to the sql query such that the returned data is limited to the field specified in the variable 'limit_by' by the string specified in 'keyword'.
setDirStr	Sets the direction by which to present data and the column to apply it to.
setSQL	Sets the sql query string based on the information set in the above two methods.

Description of Operation:

- Executes setRefinementStr method.
    - Applies refinement arguments by way of generating a string to be appended to the SQL query.
- Executes setDirStr method.
    - Applies direction arguments by way of generating a string to be appended to the SQL query.
- Executes setSQL method.
    - Generates the sql query string to be used in the transaction, appends the result of setRefinementStr method and setDirStr method.
- Executes sql query on database.
- Echoes back the results of the query to the caller.

ATAR Calculator General User Manual

Authors: Declan Holmes, Jonathan Hein, Sean Ackerley

Introduction

The objective of this manual is to highlight the general details, use and features of the provided ATAR Calculator solution. It is not the intention of this particular document to detail the fine grain implementation and maintenance of its constituent components, that is to say, this document aims to provide a broad overview of user interaction with the delivered system.

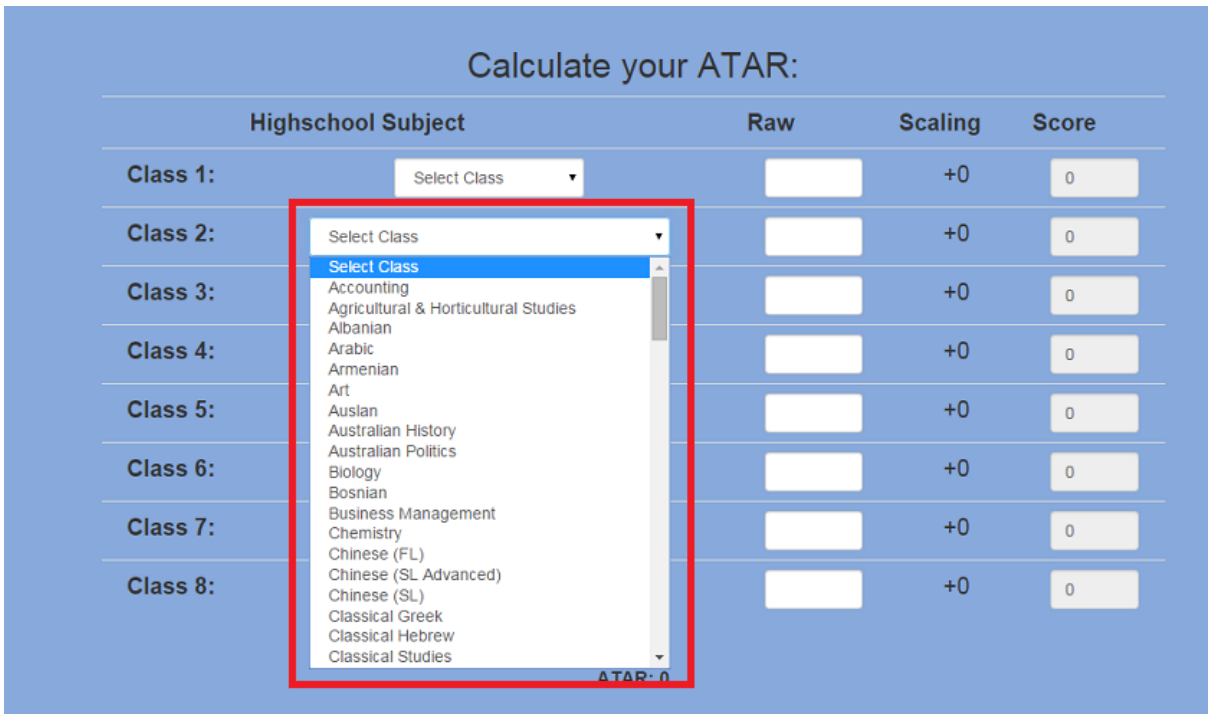
General features:

- ATAR Calculation.
- Table presenting the courses available for a particular ATAR score.
- Course entries in the courses table provide a link to their related VTAC webpage.
- Search function for the refinement of courses table data given a specific keyword and field argument.

General function:

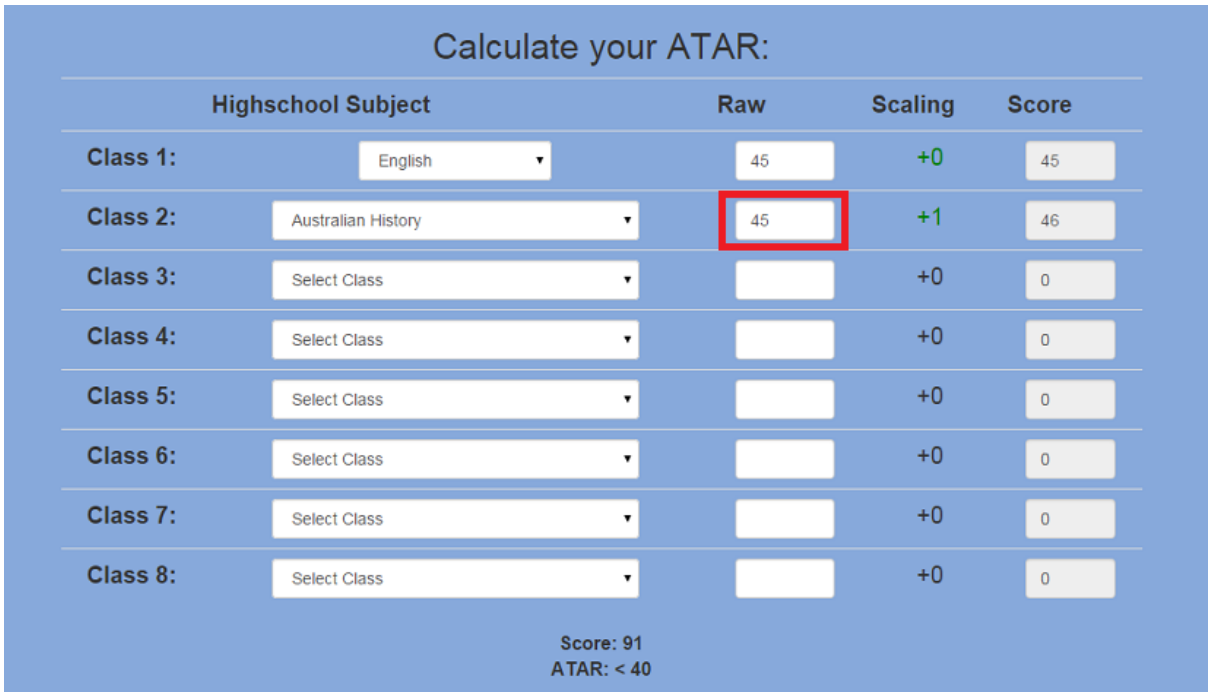
- Upon navigation to the ATAR Calculator website, the user is presented with a selection of drop down boxes from which they select those subjects of which they've undertaken (Figure 1). Subjects are sorted dynamically in order of highest score.

Figure 1.



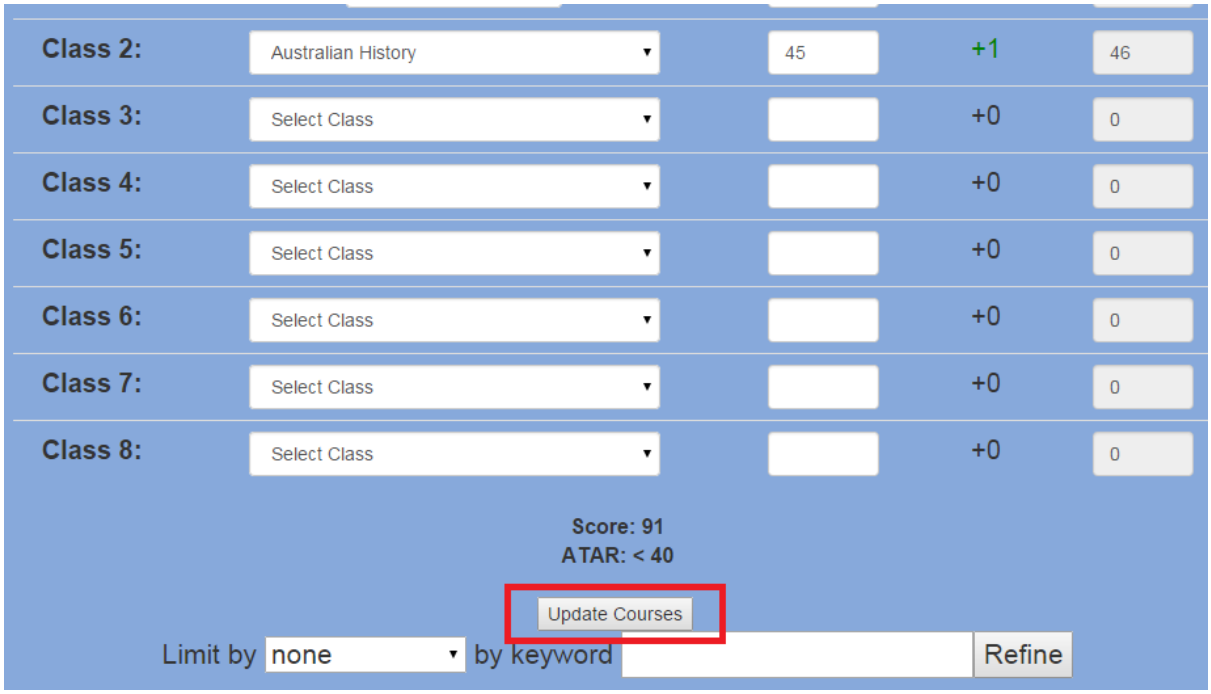
- For each subject box there is a score text box (Figure 2), users enter their raw scores for their relative subjects and upon completion are provided with their ATAR score (as well as their scaled individual scores). Scores are limited to fifty for high school subjects, five for higher education subjects and scores are irrelevant for VCE VET other subjects.

Figure 2.



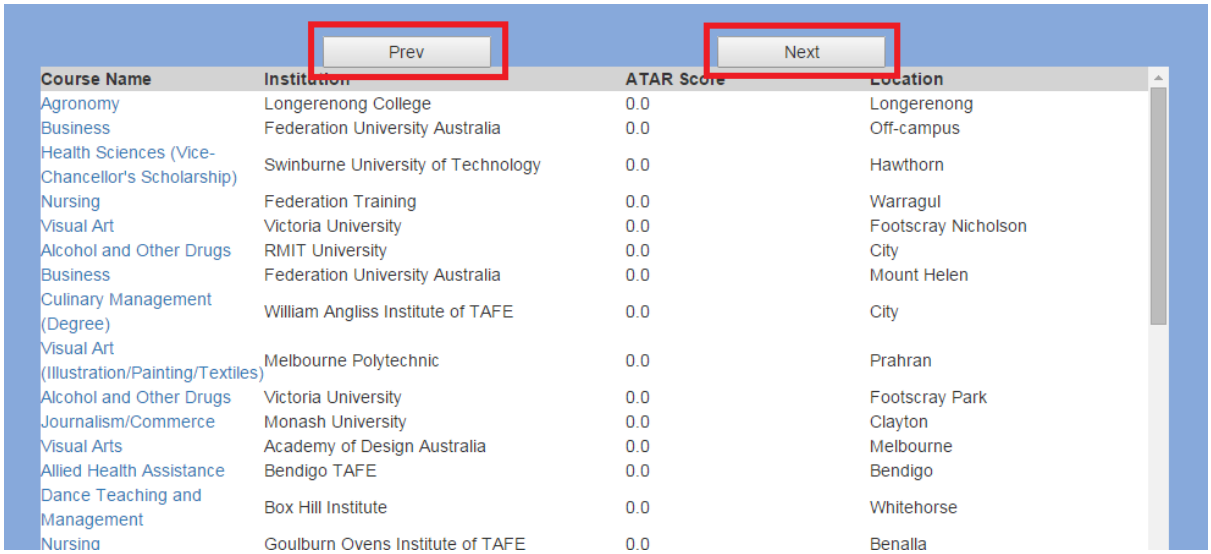
- Further, the user may press the 'Find Courses' button to be presented with a page detailing those courses they may be able to undertake with their current ATAR score.

Figure 3.



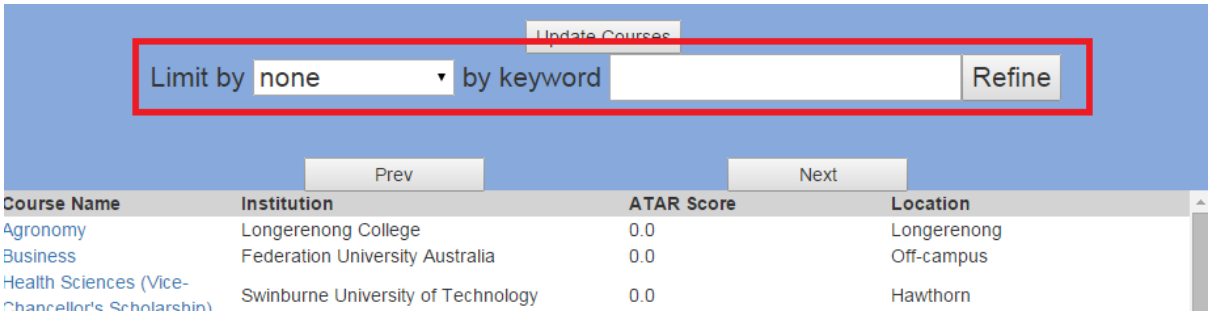
- The course table is presented in pages of fifty entries, and can be navigated using the ‘Next’ and ‘Prev’ buttons (Figure 4).

Figure 4.



- Given that a large number of entries may be returned, the user is provided with a refinement option (Figure 5):
    - The user chooses a field to refine from the drop down box provided.
    - The user enters a string of characters to refine their selected field.
    - The user is then presented with a refined set of courses where the string they entered is present in the field they selected.

Figure 5.



- Upon clicking on a presented course name the user will be taken to that courses related VTAC course page.