Testing Report

1. Automated Testing

To start automatic testing, you need to select the 5th menu item "Automated testing" in our application:

Software_Security_Project.ipynb

File Edit View Insert Runtime Tools Help Unsaved changes since 12:

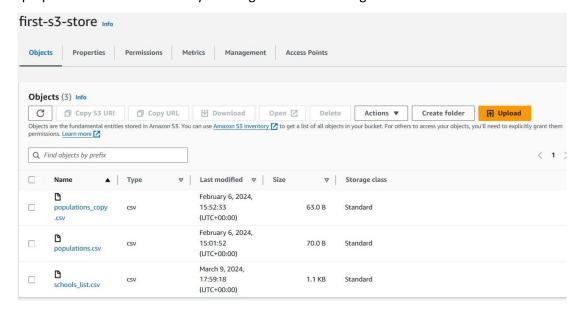
+ Code + Text

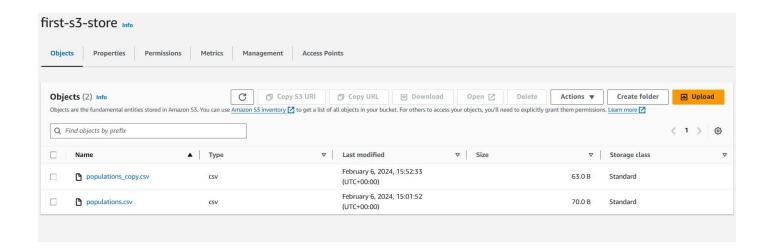


- ••• Welcome to Application List of nearby schools! Please select an option:
 - 1. Setting Google Maps API key
 - 2. Set cloud API key
 - Getting nearby schools from the Map
 - 4. Reading saved schools from the file
 - Automated testing
 - 6. Exit

Enter your choice: 5

Let's prepare a test environment by deleting the file containing the list of schools:





After which the first phase of testing is launched to test the menu construction module with normal, abnormal and extreme data for construction. It also reads data from the AWS S3 basket, obtains a list of schools and writes it to a file in the AWS S3 basket, but on the condition that the secret keys are not specified at all, even in environment variables.

Then the second phase starts and the same actions are performed but with the wrong secret keys.

```
••• Welcome to Application - List of nearby schools!
       Please select an option:

    Setting Google Maps API key
    Set cloud API key

      3. Getting nearby schools from the Map
4. Reading saved schools from the file
       5. Automated testing
            Exit
      Enter your choice 5
You selected: 5. Automated testing
       Automated testing started..
      Testing the app_menu.py module...
       Welcome to Schools App (Auto Test)!
      Please select an option:
1. Menu Test Point 1
       2. Menu Test Point 2
            Menu Test Point 3
       4. Menu Test Point 4
       Testing the app menu.pv module with normal data... OK
       Please select an option:
       1. 983465876453
       2. 876345.6578
       3. 9876435.34
       4. -987234876.56
             -976554
       Testing the app_menu.py module with abnormal data... OK
       Welcome to ['Extrim data test menu', 'Second subj']!
       Please select an option:
       1. Setting Google Maps API key
       2. Set cloud API key
3. Getting nearby schools from the Map
      4. Reading saved schools from the file
5. Automated testing
            Exit
       Testing the app_menu.py module with extrim data... OK
      Reads schools without API key for "read_schools_from_file" wrong executed: Error reading the schools from the file on S3: 'function' object has no attribute 'load' Saves schools without API key for "get_nearby_schools_from_map" wrong executed: Google Maps API creates a connection error: Invalid API key provided.

Reads schools with wrong API key for "read_schools_from_file" wrong executed: Error reading the schools from the file on S3: 'function' object has no attribute 'load' Saves schools with wrong API key for "get_nearby_schools_from_map" wrong executed: Google Maps API creates a connection error: Invalid API key provided.
       Enter your GMAPS_API_KEY:
```

To launch the third final phase of automatic testing, we need to enter the correct Google Maps API and AWS Lambda API keys. For simplicity, when understanding the AWS Lambda API key, I named it CLOUD_API_KEY, so that it would be clear to any user without strong technical skills

API key saved successfully! Reads schools with correct API key and whithout file for "read schools from file" mexecuted successfully	
Saves schools and diplay after request with incorrect coordinates for "get_nearby_schools_from_map" wrong ex	
Saves without schools for "get_nearby_schools_from_map" wrong executed: Google Maps API response error: resu Reading schools from the file on S3	ults is an empty
28 schools were saved on S3:	
name address	distance
θ Hutchesons' Grammar School 21 Beaton Road, Glasgow	2.81
1 Eastwood High School Capelrig Road, Newton Mearns, Glasgow, Glasgow	3.47
2 Glasgow Club Bellahouston 31 Bellahouston Drive, Glasgow	3.39
	3.56
4 Pro-Soccer Rouken Glen Park, Glasgow	2.16
5 St Vincent's Primary School 40 Crebar Street, Thornliebank, Glasgow	1.17
6 Cleeves Primary School 271 Househillmuir Road, Glasgow	2.89
7 Thornliebank Primary School 10 Main Street, Thornliebank, Glasgow	0.85
	1.66
	0.76
	2.83
11 Animal Man Parties 19 Pentland Road, Newlands, Glasgow	0.93
	0.54
13 Kumon Maths & English Library, Giffnock, Station Road, Giffnock, Glasgo	w 1.72
14 Carmichael Nursery School 44 Carmichael Place, Glasgow	2.53
	1.85
16 Burnbrae Children's Centre 271 Househillmuir Road, Glasgow	2.88
17 Zippytotz 48, Burnfield Avenue, Thornliebank, Glasgow	
18 Tinto Primary School 61 Nother Auldhouse Road, Glasgow	1.08
19 St Vincent's Autism Unit Co St Vincent's Primary 48 Crebar Street, Glasgow	1.15
Reads schools and diplay after request with incorrect coordinates for "read schools from file" mexecuted suc	
Saves with correct coordinates for "get mearby schools from map" mexecuted successfully Reads schools and diplay after request with correct coordinates for "read_schools_from_file" mexecuted successfully	
13 Total tests	
8 Crashes tests 6 Failed tests	
Automated testing finished	

I got the following test result:

- 13 Total tests
- 0 Crashes tests
- 6 Failed tests

This means that all planned tests were completed successfully without crashing the system.

Summarize

Based on the results of automatic testing, we can conclude that our application is reliable and stable.

2. Manual Testing

Test no.	Name Test	Used Data	Expected Outcome	Actual Outcome	Notes
1	Entering a menu item:	Extreme	Invalid choice.	As was expected	N/A
	app_menu.get_user_choice()	data:	Please try		
	app_menu.handle_user_choice(choice)	Good Day!	again.		
2	Entering a menu item:	Abnormal	Invalid choice.	As was expected	N/A
	app_menu.get_user_choice()	data:	Please try		
	app_menu.handle_user_choice(choice)	8	again.		
3	Entering a menu item:	Normal data:	Goodbye!	As was expected	N/A
	app_menu.get_user_choice()	6			
	app_menu.handle_user_choice(choice)				

4	Setting Google Maps API key get_api_key()	Normal data: Incorrect key	API key saved successfully! It is successfully	As was expected	An incorrect key has now been entered for subsequent testing of the API functionality
5	Set cloud API key set_cloud_api_key(set_key=True)	Normal data: Incorrect key	API key saved successfully! It is successfully	As was expected	An incorrect key has now been entered for subsequent testing of the API functionality
6	Reading saved schools from the file on S3: read_schools_from_file(False)	Abnormal data: Incorrect key	 A message about the selected menu item should appear Error message Request to press Enter Then updating the terminal window with a list of choices from the menu. 	As was expected	N/A
7	Saving schools to the file on S3: get_nearby_schools_from_map(False)	Abnormal data: Incorrect key	 A message about the selected menu item should appear Error message Request to press Enter Then updating the terminal window with a list of choices from the menu. 	As was expected	N/A

8	Reading saved schools from the file on S3: read_schools_from_file(False)	Extreme data: File is not exist	 A message about the selected menu item should appear Error message Request to press Enter Then updating the terminal window with a list of choices from the menu. 	As was expected	N/A
9	Saving schools to the file on S3: get_nearby_schools_from_map(False)	Extreme data: Coord: Lat: 99.999995 Lon: 0 Radius: 5km	 A message about the selected menu item should appear Error message Request to press Enter Then updating the terminal window with a list of choices from the menu. 	As was expected	N/A
10	Saving schools to the file on S3: get_nearby_schools_from_map(False)	Abnormal data: Coord: Lat: 87.543255 Lon: 0 Radius: 10km	 A message about the selected menu item should appear Error message Request to press Enter Then updating the terminal window with a list of choices from the menu. 	As was expected	N/A
11	Reading saved schools from the file on S3: read_schools_from_file(False)	Extreme data: File is not exist	 A message about the selected menu item should appear Error message Request to press Enter Then updating the terminal window with a list of choices from the menu 	As was expected	We made sure that the file is not created in case of recording errors
12	Saving schools to the file on S3: get_nearby_schools_from_map(False)	Normal data: Coord: Lat: 55.816555 Lon: - 4.309890 Radius: 4km	 A list of schools will appear on the screen Next, you will be asked whether you need to write this to a file. We answer "y" A message appears indicating that 	As was expected	N/A

			the file was successfully written to S3 • Request to press Enter • Then updating the terminal window with a list of choices from the menu
13	Reading saved schools from the file on S3: read_schools_from_file(False)	Normal data: The file exists and includes a list of schools in the correct format	 A list of schools will appear on the screen Request to press Enter Then updating the terminal window with a list of choices from the menu
14	Reading saved schools from the file on S3: read_schools_from_file(False)	Extreme data: Using the PostMan, we write data in the wrong format to a file	 A message will be displayed stating that the data was read successfully, but the file does not contain a list of schools Request to press Enter Then updating the terminal window with a list of choices from the menu

3. Conclusive Summarizing

Considering the results of the threat design and the completed tests, you can finally conclude that I received a highly reliable and stable code that works not only with normal data, but also with abnormal and extreme data, and at the same time, the application behaves stable and reliable and does not crash.