Testing Checklist

As part of our testing strategy, we set out to test every single Python file with two external libraries:

- ***Bandit***: Bandit is a tool that allows users to find common security issues within their Python code. Based on the report generated by Bandit, we can patch any vulnerabilities found within the code (PyPi, 2023).
- ***Pylama***: Pylama is a code auditing tool, including other tools such as pycodestyle, pydocstyle, Pyflakes, Mccabe, and Pylint (PyPi, 2023).

The rest of the document will be structured as follows. The tested files have been sorted based on which folder they are situated in. The first screenshot of each file is the result of the ***bandit*** report, followed by any comments. Any other screenshots will represent the results of the ***pylama*** audit. Some files include two screenshots from ***pylama***, the first one being the original audit and the second one being what is still being flagged by ***pylama*** and why we have chosen to leave it this way. If there is only one ***pylama*** screenshot, then we were able to rectify all flagged issues.

Application Folder

This section includes all Python files found directly inside the application folder.

database.py

```
H:\University\secure-software-development\application>bandit database.py
[main]  INFO    profile include tests: None
[main]  INFO    profile exclude tests: None
[main]  INFO    cli include tests: None
[main]  INFO    cli exclude tests: None
[main]  INFO    running on Python 3.10.6
[node_visitor]  WARNING Unable to find qualified name for module: database.py
Run started:2023-07-15 12:53:07.908404

Test results:
        No issues identified.

Code scanned:
        Total lines of code: 120
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
Files skipped (0):

H:\University\secure-software-development\application>
```

```
H:\University\secure-software-development\application>pylama database.py
database.py:3:1 E302 expected 2 blank lines, found 1 [pycodestyle]
database.py:5:1 W293 blank line contains whitespace [pycodestyle]
database.py:18:33 W291 trailing whitespace [pycodestyle]
database.py:21:31 W291 trailing whitespace [pycodestyle]
database.py:22:29 W291 trailing whitespace [pycodestyle]
database.py:27:42 W291 trailing whitespace [pycodestyle]
database.py:60:60 W291 trailing whitespace [pycodestyle]
database.py:61:72 W291 trailing whitespace [pycodestyle]
database.py:86:42 W291 trailing whitespace [pycodestyle]
database.py:95:9 E303 too many blank lines (3) [pycodestyle]
database.py:100:35 W291 trailing whitespace [pycodestyle]
database.py:109:74 W291 trailing whitespace [pycodestyle]
database.py:110:62 W291 trailing whitespace [pycodestyle]
database.py:123:32 W291 trailing whitespace [pycodestyle]
database.py:131:9 E303 too many blank lines (2) [pycodestyle]
database.py:148:33 W291 trailing whitespace [pycodestyle]
database.py:149:43 W291 trailing whitespace [pycodestyle]
database.py:159:1 E305 expected 2 blank lines after class or function definition, found 1 [pycodestyle]
```

imports.py

```
H:\University\secure-software-development\application>bandit imports.py
[main]      INFO      profile include tests: None
[main]      INFO      profile exclude tests: None
[main]      INFO      cli include tests: None
[main]      INFO      cli exclude tests: None
[main]      INFO      running on Python 3.10.6
[node_visitor]  WARNING Unable to find qualified name for module: imports.py
Run started:2023-07-15 12:53:56.964364

Test results:
        No issues identified.

Code scanned:
        Total lines of code: 26
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
Files skipped (0):

H:\University\secure-software-development\application>
```

```
H:\University\secure-software-development\application>pylama imports.py
imports.py:2:1 W0611 'getpass' imported but unused [pyflakes]
imports.py:3:1 W0611 'bcrypt' imported but unused [pyflakes]
imports.py:4:1 W0611 'cryptography.fernet.Fernet' imported but unused [pyflakes]
imports.py:5:1 W0611 're' imported but unused [pyflakes]
imports.py:6:1 W0611 'sqlite3' imported but unused [pyflakes]
imports.py:7:1 W0611 'datetime' imported but unused [pyflakes]
imports.py:8:1 W0611 'uuid' imported but unused [pyflakes]
imports.py:14:1 W0611 'classes.controllers.actionscontroller.ActionsController' imported but unused [pyflakes]
imports.py:17:1 W0611 'classes.infosec.login_service.Login_Service' imported but unused [pyflakes]
imports.py:18:1 W0611 'classes.infosec.encryption_service.Encryption_Service' imported but unused [pyflakes]
imports.py:19:1 W0611 'classes.infosec.authorisation_service.AuthorisationService' imported but unused [pyflakes]
imports.py:20:1 W0611 'classes.infosec.input_sanitisation.Input_Sanitisation_Service' imported but unused [pyflakes]
imports.py:23:1 W0611 'classes.logger.logger.Logger' imported but unused [pyflakes]
imports.py:24:1 W0611 'classes.logger.auditor.Auditor' imported but unused [pyflakes]
imports.py:27:1 W0611 'classes.sensors.geigercounter.GeigerCounter' imported but unused [pyflakes]
imports.py:28:1 W0611 'classes.sensors.thermometer.Thermometer' imported but unused [pyflakes]
imports.py:31:1 W0611 'classes.models.user.User' imported but unused [pyflakes]
imports.py:32:1 W0611 'classes.models.country.Country' imported but unused [pyflakes]
imports.py:33:1 W0611 'classes.models.healthrecord.HealthRecord' imported but unused [pyflakes]
imports.py:34:1 W0611 'classes.models.permission.Permission' imported but unused [pyflakes]
imports.py:35:1 W0611 'classes.models.role.Role' imported but unused [pyflakes]
imports.py:38:1 W0611 'classes.authseeder.AuthSeeder' imported but unused [pyflakes]
imports.py:39:1 W0611 'classes.dbmanager.DBManager' imported but unused [pyflakes]
imports.py:40:1 W0611 'classes.commandline_interface.CommandLineInterface' imported but unused [pyflakes]
imports.py:41:1 W0611 'classes.download_service.DownloadService' imported but unused [pyflakes]
imports.py:42:1 W0611 'database.DBShape' imported but unused [pyflakes]
```

If run again, **pylama** will flag the same issues. We are using **imports.py** as a central repository for all other files and libraries we are using throughout our project. This way, we are able to import from one central file.

main.py

```
H:\University\secure-software-development\application>bandit main.py
[main]   INFO    profile include tests: None
[main]   INFO    profile exclude tests: None
[main]   INFO    cli include tests: None
[main]   INFO    cli exclude tests: None
[main]   INFO    running on Python 3.10.6
[node_visitor]   WARNING Unable to find qualified name for module: main.py
Run started:2023-07-15 12:54:17.246681

Test results:
        No issues identified.

Code scanned:
        Total lines of code: 74
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
Files skipped (0):
```

```
H:\University\secure-software-development\application>pylama main.py
main.py:5:101 E501 line too long (162 > 100 characters) [pycodestyle]
main.py:6:101 E501 line too long (132 > 100 characters) [pycodestyle]
main.py:51:57 E261 at least two spaces before inline comment [pycodestyle]
main.py:91:1 E305 expected 2 blank lines after class or function definition, found 1 [pycodestyle]

H:\University\secure-software-development\application>
```

Classes Folder

authseeder.py

```
H:\University\secure-software-development\application\classes>bandit authseeder.py
[main]  INFO    profile include tests: None
[main]  INFO    profile exclude tests: None
[main]  INFO    cli include tests: None
[main]  INFO    cli exclude tests: None
[main]  INFO    running on Python 3.10.6
[node_visitor]  WARNING Unable to find qualified name for module: authseeder.py
Run started:2023-07-15 12:54:58.599167

Test results:
        No issues identified.

Code scanned:
        Total lines of code: 136
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
Files skipped (0):
```

```
H:\University\secure-software-development\application\classes>pylama authseeder.py
authseeder.py:3:1 E302 expected 2 blank lines, found 1 [pycodestyle]
authseeder.py:4:59 W291 trailing whitespace [pycodestyle]
authseeder.py:6:41 W291 trailing whitespace [pycodestyle]
authseeder.py:6:31 E231 missing whitespace after ':' [pycodestyle]
authseeder.py:7:27 W291 trailing whitespace [pycodestyle]
authseeder.py:7:13 E128 continuation line under-indented for visual indent [pycodestyle]
authseeder.py:7:17 E231 missing whitespace after ':' [pycodestyle]
authseeder.py:8:28 W291 trailing whitespace [pycodestyle]
authseeder.py:8:13 E128 continuation line under-indented for visual indent [pycodestyle]
authseeder.py:8:17 E231 missing whitespace after ':' [pycodestyle]
authseeder.py:9:27 W291 trailing whitespace [pycodestyle]
authseeder.py:9:13 E128 continuation line under-indented for visual indent [pycodestyle]
authseeder.py:9:17 E231 missing whitespace after ':' [pycodestyle]
authseeder.py:10:28 W291 trailing whitespace [pycodestyle]
authseeder.py:10:13 E128 continuation line under-indented for visual indent [pycodestyle]
authseeder.py:10:17 E231 missing whitespace after ':' [pycodestyle]
authseeder.py:11:26 W291 trailing whitespace [pycodestyle]
authseeder.py:11:13 E128 continuation line under-indented for visual indent [pycodestyle]
authseeder.py:11:17 E231 missing whitespace after ':' [pycodestyle]
authseeder.py:12:26 W291 trailing whitespace [pycodestyle]
authseeder.py:12:13 E128 continuation line under-indented for visual indent [pycodestyle]
authseeder.py:12:17 E231 missing whitespace after ':' [pycodestyle]
authseeder.py:13:32 W291 trailing whitespace [pycodestyle]
authseeder.py:13:13 E128 continuation line under-indented for visual indent [pycodestyle]
authseeder.py:13:17 E231 missing whitespace after ':' [pycodestyle]
authseeder.py:14:27 W291 trailing whitespace [pycodestyle]
authseeder.py:14:13 E128 continuation line under-indented for visual indent [pycodestyle]
authseeder.py:14:17 E231 missing whitespace after ':' [pycodestyle]
authseeder.py:15:39 W291 trailing whitespace [pycodestyle]
authseeder.py:15:13 E128 continuation line under-indented for visual indent [pycodestyle]
authseeder.py:15:17 E231 missing whitespace after ':' [pycodestyle]
authseeder.py:16:26 W291 trailing whitespace [pycodestyle]
authseeder.py:16:13 E128 continuation line under-indented for visual indent [pycodestyle]
authseeder.py:16:17 E231 missing whitespace after ':' [pycodestyle]
authseeder.py:17:13 E128 continuation line under-indented for visual indent [pycodestyle]
authseeder.py:17:17 E231 missing whitespace after ':' [pycodestyle]
authseeder.py:18:32 W291 trailing whitespace [pycodestyle]
authseeder.py:18:13 E128 continuation line under-indented for visual indent [pycodestyle]
authseeder.py:18:17 E231 missing whitespace after ':' [pycodestyle]
authseeder.py:19:13 E128 continuation line under-indented for visual indent [pycodestyle]
authseeder.py:19:17 E231 missing whitespace after ':' [pycodestyle]
authseeder.py:20:33 W291 trailing whitespace [pycodestyle]
authseeder.py:20:13 E128 continuation line under-indented for visual indent [pycodestyle]
authseeder.py:20:17 E231 missing whitespace after ':' [pycodestyle]
authseeder.py:21:9 E124 closing bracket does not match visual indentation [pycodestyle]
authseeder.py:26:21 E128 continuation line under-indented for visual indent [pycodestyle]
authseeder.py:27:21 E128 continuation line under-indented for visual indent [pycodestyle]
authseeder.py:28:21 E128 continuation line under-indented for visual indent [pycodestyle]
authseeder.py:29:21 E128 continuation line under-indented for visual indent [pycodestyle]
authseeder.py:30:21 E128 continuation line under-indented for visual indent [pycodestyle]
authseeder.py:31:21 E128 continuation line under-indented for visual indent [pycodestyle]
authseeder.py:32:9 E124 closing bracket does not match visual indentation [pycodestyle]
authseeder.py:34:40 E231 missing whitespace after ',' [pycodestyle]
authseeder.py:34:47 E231 missing whitespace after ',' [pycodestyle]
authseeder.py:34:54 E231 missing whitespace after ',' [pycodestyle]
authseeder.py:34:61 E231 missing whitespace after ',' [pycodestyle]
authseeder.py:34:68 E231 missing whitespace after ',' [pycodestyle]
authseeder.py:34:75 E231 missing whitespace after ',' [pycodestyle]
authseeder.py:35:33 E128 continuation line under-indented for visual indent [pycodestyle]
authseeder.py:35:35 E231 missing whitespace after ',' [pycodestyle]
authseeder.py:35:42 E231 missing whitespace after ',' [pycodestyle]
authseeder.py:35:49 E231 missing whitespace after ',' [pycodestyle]
authseeder.py:35:56 E231 missing whitespace after ',' [pycodestyle]
authseeder.py:35:73 E231 missing whitespace after ',' [pycodestyle]
authseeder.py:35:81 E231 missing whitespace after ',' [pycodestyle]
authseeder.py:35:89 E231 missing whitespace after ',' [pycodestyle]
authseeder.py:36:35 E231 missing whitespace after ',' [pycodestyle]
authseeder.py:36:42 E231 missing whitespace after ',' [pycodestyle]
authseeder.py:36:49 E231 missing whitespace after ',' [pycodestyle]
authseeder.py:36:56 E231 missing whitespace after ',' [pycodestyle]
authseeder.py:36:63 E231 missing whitespace after ',' [pycodestyle]
authseeder.py:36:71 E231 missing whitespace after ',' [pycodestyle]
authseeder.py:36:79 E231 missing whitespace after ',' [pycodestyle]
authseeder.py:36:87 E231 missing whitespace after ',' [pycodestyle]
authseeder.py:37:35 E231 missing whitespace after ',' [pycodestyle]
authseeder.py:37:42 E231 missing whitespace after ',' [pycodestyle]
authseeder.py:37:49 E231 missing whitespace after ',' [pycodestyle]
authseeder.py:37:57 E231 missing whitespace after ',' [pycodestyle]
authseeder.py:43:28 E203 whitespace before ':' [pycodestyle]
authseeder.py:59:23 E203 whitespace before ':' [pycodestyle]
authseeder.py:76:101 E501 line too long (114 > 100 characters) [pycodestyle]
authseeder.py:78:26 W291 trailing whitespace [pycodestyle]
authseeder.py:81:24 E201 whitespace after '(' [pycodestyle]
authseeder.py:81:29 E202 whitespace before ')' [pycodestyle]
authseeder.py:85:44 W291 trailing whitespace [pycodestyle]
authseeder.py:88:37 W291 trailing whitespace [pycodestyle]
authseeder.py:90:1 W293 blank line contains whitespace [pycodestyle]
authseeder.py:92:29 E201 whitespace after '(' [pycodestyle]
authseeder.py:92:34 E202 whitespace before ')' [pycodestyle]
authseeder.py:96:36 W291 trailing whitespace [pycodestyle]
authseeder.py:99:37 W291 trailing whitespace [pycodestyle]
authseeder.py:101:1 W293 blank line contains whitespace [pycodestyle]
authseeder.py:103:20 E201 whitespace after '(' [pycodestyle]
authseeder.py:103:25 E202 whitespace before ')' [pycodestyle]
authseeder.py:107:32 W291 trailing whitespace [pycodestyle]
authseeder.py:110:37 W291 trailing whitespace [pycodestyle]
authseeder.py:112:1 W293 blank line contains whitespace [pycodestyle]
authseeder.py:114:26 E201 whitespace after '(' [pycodestyle]
authseeder.py:114:31 E202 whitespace before ')' [pycodestyle]
authseeder.py:118:38 W291 trailing whitespace [pycodestyle]
authseeder.py:121:37 W291 trailing whitespace [pycodestyle]
authseeder.py:123:1 W293 blank line contains whitespace [pycodestyle]
authseeder.py:124:35 E201 whitespace after '(' [pycodestyle]
authseeder.py:124:40 E202 whitespace before ')' [pycodestyle]
authseeder.py:128:44 W291 trailing whitespace [pycodestyle]
authseeder.py:129:72 W291 trailing whitespace [pycodestyle]
authseeder.py:131:37 W291 trailing whitespace [pycodestyle]
authseeder.py:133:1 W293 blank line contains whitespace [pycodestyle]
authseeder.py:134:20 E201 whitespace after '(' [pycodestyle]
authseeder.py:134:25 E202 whitespace before ')' [pycodestyle]
authseeder.py:135:1 W293 blank line contains whitespace [pycodestyle]
authseeder.py:138:29 W291 trailing whitespace [pycodestyle]
authseeder.py:141:37 W291 trailing whitespace [pycodestyle]
authseeder.py:143:1 W293 blank line contains whitespace [pycodestyle]
authseeder.py:146:9 W0612 local variable 'c' is assigned to but never used [pyflakes]
authseeder.py:147:9 W0612 local variable 'r' is assigned to but never used [pyflakes]
authseeder.py:147:30 W291 trailing whitespace [pycodestyle]
authseeder.py:148:9 W0612 local variable 'p' is assigned to but never used [pyflakes]
authseeder.py:148:36 W291 trailing whitespace [pycodestyle]
authseeder.py:149:9 W0612 local variable 'rhp' is assigned to but never used [pyflakes]
authseeder.py:150:9 W0612 local variable 'u' is assigned to but never used [pyflakes]
authseeder.py:151:9 W0612 local variable 'hr' is assigned to but never used [pyflakes]
authseeder.py:164:1 W293 blank line contains whitespace [pycodestyle]
```

After fixing most of the issues, we are left with the following flag:

```
H:\University\secure-software-development\application\classes>pylama authseeder.py
authseeder.py:145:9 W0612 local variable 'c' is assigned to but never used [pyflakes]
authseeder.py:146:9 W0612 local variable 'r' is assigned to but never used [pyflakes]
authseeder.py:147:9 W0612 local variable 'p' is assigned to but never used [pyflakes]
authseeder.py:148:9 W0612 local variable 'rhp' is assigned to but never used [pyflakes]
authseeder.py:149:9 W0612 local variable 'u' is assigned to but never used [pyflakes]
authseeder.py:150:9 W0612 local variable 'hr' is assigned to but never used [pyflakes]
```

commandline_interface.py

```
H:\University\secure-software-development\application\classes>bandit commandline_interface.py
[main]  INFO    profile include tests: None
[main]  INFO    profile exclude tests: None
[main]  INFO    cli include tests: None
[main]  INFO    cli exclude tests: None
[main]  INFO    running on Python 3.10.6
[node_visitor]  WARNING Unable to find qualified name for module: commandline_interface.py
Run started:2023-07-15 12:55:22.857719

Test results:
        No issues identified.

Code scanned:
        Total lines of code: 477
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
Files skipped (0):
```

```
H:\University\secure-software-development\application\classes>pylama commandline_interface.py
commandline_interface.py:7:1 W0611 'time' imported but unused [pyflakes]
commandline_interface.py:12:1 E302 expected 2 blank lines, found 1 [pycodestyle]
commandline_interface.py:23:52 E261 at least two spaces before inline comment [pycodestyle]
commandline_interface.py:42:1 W293 blank line contains whitespace [pycodestyle]
commandline_interface.py:66:5 C901 'CommandLineInterface.display_user_menu' is too complex (19) [mccabe]
commandline_interface.py:66:43 E261 at least two spaces before inline comment [pycodestyle]
commandline_interface.py:68:32 E261 at least two spaces before inline comment [pycodestyle]
commandline_interface.py:73:1 W293 blank line contains whitespace [pycodestyle]
commandline_interface.py:79:13 E722 do not use bare 'except' [pycodestyle]
commandline_interface.py:83:54 W291 trailing whitespace [pycodestyle]
commandline_interface.py:90:45 E261 at least two spaces before inline comment [pycodestyle]
commandline_interface.py:92:34 E261 at least two spaces before inline comment [pycodestyle]
commandline_interface.py:96:33 E265 block comment should start with '# ' [pycodestyle]
commandline_interface.py:97:101 E501 line too long (106 > 100 characters) [pycodestyle]
commandline_interface.py:111:1 W293 blank line contains whitespace [pycodestyle]
commandline_interface.py:117:101 E501 line too long (104 > 100 characters) [pycodestyle]
commandline_interface.py:117:90 E261 at least two spaces before inline comment [pycodestyle]
commandline_interface.py:118:21 E722 do not use bare 'except' [pycodestyle]
commandline_interface.py:130:33 E261 at least two spaces before inline comment [pycodestyle]
commandline_interface.py:133:9 W0612 local variable 'COLOR_RED' is assigned to but never used [pyflakes]
commandline_interface.py:138:31 W291 trailing whitespace [pycodestyle]
commandline_interface.py:139:31 W291 trailing whitespace [pycodestyle]
commandline_interface.py:140:31 W291 trailing whitespace [pycodestyle]
commandline_interface.py:141:31 W291 trailing whitespace [pycodestyle]
commandline_interface.py:142:31 W291 trailing whitespace [pycodestyle]
commandline_interface.py:159:101 E501 line too long (115 > 100 characters) [pycodestyle]
commandline_interface.py:160:1 W293 blank line contains whitespace [pycodestyle]
commandline_interface.py:161:101 E501 line too long (110 > 100 characters) [pycodestyle]
commandline_interface.py:167:31 E261 at least two spaces before inline comment [pycodestyle]
commandline_interface.py:198:21 E265 block comment should start with '# ' [pycodestyle]
commandline_interface.py:245:28 E261 at least two spaces before inline comment [pycodestyle]
commandline_interface.py:453:25 E117 over-indented [pycodestyle]
commandline_interface.py:509:1 W293 blank line contains whitespace [pycodestyle]
commandline_interface.py:517:1 W293 blank line contains whitespace [pycodestyle]
commandline_interface.py:521:1 W293 blank line contains whitespace [pycodestyle]
commandline_interface.py:525:1 W293 blank line contains whitespace [pycodestyle]
commandline_interface.py:529:1 W293 blank line contains whitespace [pycodestyle]
commandline_interface.py:533:1 W293 blank line contains whitespace [pycodestyle]
commandline_interface.py:537:1 W293 blank line contains whitespace [pycodestyle]
commandline_interface.py:538:43 E261 at least two spaces before inline comment [pycodestyle]
commandline_interface.py:558:101 E501 line too long (121 > 100 characters) [pycodestyle]
```

After fixing most of the issues, we are left with this flag:

```
H:\University\secure-software-development\application\classes>pylama commandline_interface.py
commandline_interface.py:66:5 C901 'CommandLineInterface.display_user_menu' is too complex (19) [mccabe]
commandline_interface.py:79:13 E722 do not use bare 'except' [pycodestyle]
commandline_interface.py:120:21 E722 do not use bare 'except' [pycodestyle]
```

dbmanager.py

```
H:\University\secure-software-development\application\classes>bandit dbmanager.py
[main]  INFO     profile include tests: None
[main]  INFO     profile exclude tests: None
[main]  INFO     cli include tests: None
[main]  INFO     cli exclude tests: None
[main]  INFO     running on Python 3.10.6
[node_visitor]  WARNING Unable to find qualified name for module: dbmanager.py
Run started:2023-07-15 12:55:46.668084

Test results:
        No issues identified.

Code scanned:
        Total lines of code: 54
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
Files skipped (0):
```

```
H:\University\secure-software-development\application\classes>pylama dbmanager.py
dbmanager.py:1:1 W0611 'sys' imported but unused [pyflakes]
dbmanager.py:2:1 W0611 'os' imported but unused [pyflakes]
dbmanager.py:8:57 W291 trailing whitespace [pycodestyle]
dbmanager.py:12:1 W293 blank line contains whitespace [pycodestyle]
dbmanager.py:14:55 E261 at least two spaces before inline comment [pycodestyle]
dbmanager.py:16:1 W293 blank line contains whitespace [pycodestyle]
dbmanager.py:18:37 W291 trailing whitespace [pycodestyle]
dbmanager.py:21:19 E201 whitespace after '(' [pycodestyle]
dbmanager.py:21:43 E202 whitespace before ')' [pycodestyle]
dbmanager.py:21:38 E251 unexpected spaces around keyword / parameter equals [pycodestyle]
dbmanager.py:22:13 W291 trailing whitespace [pycodestyle]
dbmanager.py:24:57 W291 trailing whitespace [pycodestyle]
dbmanager.py:24:42 E201 whitespace after '(' [pycodestyle]
dbmanager.py:24:55 E202 whitespace before ')' [pycodestyle]
dbmanager.py:26:42 E201 whitespace after '(' [pycodestyle]
dbmanager.py:26:48 E202 whitespace before ')' [pycodestyle]
dbmanager.py:28:47 W291 trailing whitespace [pycodestyle]
dbmanager.py:29:1 W293 blank line contains whitespace [pycodestyle]
dbmanager.py:32:1 W293 blank line contains whitespace [pycodestyle]
dbmanager.py:34:19 E201 whitespace after '(' [pycodestyle]
dbmanager.py:34:55 E202 whitespace before ')' [pycodestyle]
dbmanager.py:34:38 E251 unexpected spaces around keyword / parameter equals [pycodestyle]
dbmanager.py:35:1 W293 blank line contains whitespace [pycodestyle]
dbmanager.py:36:18 W291 trailing whitespace [pycodestyle]
dbmanager.py:38:57 W291 trailing whitespace [pycodestyle]
dbmanager.py:38:42 E201 whitespace after '(' [pycodestyle]
dbmanager.py:38:55 E202 whitespace before ')' [pycodestyle]
dbmanager.py:39:28 W291 trailing whitespace [pycodestyle]
dbmanager.py:43:1 W293 blank line contains whitespace [pycodestyle]
dbmanager.py:45:49 W291 trailing whitespace [pycodestyle]
dbmanager.py:50:1 W293 blank line contains whitespace [pycodestyle]
dbmanager.py:51:1 W293 blank line contains whitespace [pycodestyle]
dbmanager.py:52:1 W293 blank line contains whitespace [pycodestyle]
dbmanager.py:53:5 E303 too many blank lines (3) [pycodestyle]
dbmanager.py:55:5 E301 expected 1 blank line, found 0 [pycodestyle]
dbmanager.py:55:19 E201 whitespace after '(' [pycodestyle]
dbmanager.py:55:51 E202 whitespace before ')' [pycodestyle]
dbmanager.py:55:36 E251 unexpected spaces around keyword / parameter equals [pycodestyle]
dbmanager.py:56:1 W293 blank line contains whitespace [pycodestyle]
dbmanager.py:57:16 W291 trailing whitespace [pycodestyle]
dbmanager.py:59:55 W291 trailing whitespace [pycodestyle]
dbmanager.py:59:42 E201 whitespace after '(' [pycodestyle]
dbmanager.py:59:53 E202 whitespace before ')' [pycodestyle]
dbmanager.py:60:28 W291 trailing whitespace [pycodestyle]
dbmanager.py:63:50 W291 trailing whitespace [pycodestyle]
dbmanager.py:64:1 W293 blank line contains whitespace [pycodestyle]
dbmanager.py:66:49 W291 trailing whitespace [pycodestyle]
dbmanager.py:71:1 W293 blank line contains whitespace [pycodestyle]
dbmanager.py:74:19 E201 whitespace after '(' [pycodestyle]
dbmanager.py:74:53 E202 whitespace before ')' [pycodestyle]
dbmanager.py:74:38 E251 unexpected spaces around keyword / parameter equals [pycodestyle]
dbmanager.py:75:1 W293 blank line contains whitespace [pycodestyle]
dbmanager.py:76:18 W291 trailing whitespace [pycodestyle]
dbmanager.py:77:17 W291 trailing whitespace [pycodestyle]
dbmanager.py:78:57 W291 trailing whitespace [pycodestyle]
dbmanager.py:78:42 E201 whitespace after '(' [pycodestyle]
dbmanager.py:78:55 E202 whitespace before ')' [pycodestyle]
dbmanager.py:83:1 W293 blank line contains whitespace [pycodestyle]
dbmanager.py:85:49 W291 trailing whitespace [pycodestyle]
dbmanager.py:86:25 W291 trailing whitespace [pycodestyle]
dbmanager.py:89:1 W293 blank line contains whitespace [pycodestyle]
dbmanager.py:95:1 W293 blank line contains whitespace [pycodestyle]
dbmanager.py:96:1 E265 block comment should start with '# ' [pycodestyle]
dbmanager.py:100:69 W291 trailing whitespace [pycodestyle]
dbmanager.py:103:1 E265 block comment should start with '# ' [pycodestyle]
dbmanager.py:111:1 E265 block comment should start with '# ' [pycodestyle]
```

download_service.py

```
H:\University\secure-software-development\application\classes>bandit download_service.py
[main]  INFO    profile include tests: None
[main]  INFO    profile exclude tests: None
[main]  INFO    cli include tests: None
[main]  INFO    cli exclude tests: None
[main]  INFO    running on Python 3.10.6
[node_visitor]  WARNING Unable to find qualified name for module: download_service.py
Run started:2023-07-15 12:56:22.296667

Test results:
        No issues identified.

Code scanned:
        Total lines of code: 51
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
Files skipped (0):
```

```
H:\University\secure-software-development\application\classes>pylama download_service.py
download_service.py:2:101 E501 line too long (101 > 100 characters) [pycodestyle]
download_service.py:10:1 E302 expected 2 blank lines, found 1 [pycodestyle]
download_service.py:21:9 E265 block comment should start with '# ' [pycodestyle]
download_service.py:22:101 E501 line too long (104 > 100 characters) [pycodestyle]
download_service.py:23:9 E265 block comment should start with '# ' [pycodestyle]
download_service.py:24:9 E265 block comment should start with '# ' [pycodestyle]
download_service.py:30:1 W293 blank line contains whitespace [pycodestyle]
download_service.py:42:1 W293 blank line contains whitespace [pycodestyle]
download_service.py:44:1 W293 blank line contains whitespace [pycodestyle]
download_service.py:48:9 E265 block comment should start with '# ' [pycodestyle]
download_service.py:49:9 E265 block comment should start with '# ' [pycodestyle]
download_service.py:50:9 E265 block comment should start with '# ' [pycodestyle]
download_service.py:51:25  f-string is missing placeholders [pyflakes]
download_service.py:53:13 E265 block comment should start with '# ' [pycodestyle]
download_service.py:62:1 W293 blank line contains whitespace [pycodestyle]
download_service.py:72:1 W293 blank line contains whitespace [pycodestyle]
download_service.py:76:1 W293 blank line contains whitespace [pycodestyle]
download_service.py:80:1 W293 blank line contains whitespace [pycodestyle]
```

Controllers Folder

actionscontroller.py

```
H:\University\secure-software-development\application\classes\controllers>bandit actionscontroller.py
[main]  INFO    profile include tests: None
[main]  INFO    profile exclude tests: None
[main]  INFO    cli include tests: None
[main]  INFO    cli exclude tests: None
[main]  INFO    running on Python 3.10.6
[node_visitor]  WARNING Unable to find qualified name for module: actionscontroller.py
Run started:2023-07-15 12:56:53.388679

Test results:
        No issues identified.

Code scanned:
        Total lines of code: 557
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
Files skipped (0):
```

```
H:\University\secure-software-development\application\classes\controllers>pylama actionscontroller.py
actionscontroller.py:5:1 E302 expected 2 blank lines, found 1 [pycodestyle]
actionscontroller.py:30:47 W291 trailing whitespace [pycodestyle]
actionscontroller.py:39:35 E128 continuation line under-indented for visual indent [pycodestyle]
actionscontroller.py:53:101 E501 line too long (114 > 100 characters) [pycodestyle]
actionscontroller.py:54:60 E261 at least two spaces before inline comment [pycodestyle]
actionscontroller.py:56:101 E501 line too long (107 > 100 characters) [pycodestyle]
actionscontroller.py:56:37 E127 continuation line over-indented for visual indent [pycodestyle]
actionscontroller.py:57:60 E261 at least two spaces before inline comment [pycodestyle]
actionscontroller.py:65:101 E501 line too long (108 > 100 characters) [pycodestyle]
actionscontroller.py:66:9 E731 do not assign a lambda expression, use a def [pycodestyle]
actionscontroller.py:69:1 W293 blank line contains whitespace [pycodestyle]
actionscontroller.py:72:59 W291 trailing whitespace [pycodestyle]
actionscontroller.py:77:1 W293 blank line contains whitespace [pycodestyle]
actionscontroller.py:84:17 E221 multiple spaces before operator [pycodestyle]
actionscontroller.py:122:101 E501 line too long (108 > 100 characters) [pycodestyle]
actionscontroller.py:132:19 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:133:28 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:134:21 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:135:23 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:136:29 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:137:24 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:139:26 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:145:1 W293 blank line contains whitespace [pycodestyle]
actionscontroller.py:152:101 E501 line too long (108 > 100 characters) [pycodestyle]
actionscontroller.py:161:19 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:162:28 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:163:21 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:164:23 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:165:29 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:166:26 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:172:1 W293 blank line contains whitespace [pycodestyle]
actionscontroller.py:187:101 E501 line too long (108 > 100 characters) [pycodestyle]
actionscontroller.py:198:19 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:199:28 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:200:21 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:201:23 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:202:29 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:203:26 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:224:101 E501 line too long (108 > 100 characters) [pycodestyle]
actionscontroller.py:228:101 E501 line too long (111 > 100 characters) [pycodestyle]
actionscontroller.py:228:66 E261 at least two spaces before inline comment [pycodestyle]
actionscontroller.py:228:67 E262 inline comment should start with '# ' [pycodestyle]
actionscontroller.py:234:19 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:235:28 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:236:21 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:237:23 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:238:29 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:239:26 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:245:1 W293 blank line contains whitespace [pycodestyle]
actionscontroller.py:262:101 E501 line too long (108 > 100 characters) [pycodestyle]
actionscontroller.py:272:19 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:273:28 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:274:21 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:275:23 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:276:29 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:277:26 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:301:101 E501 line too long (108 > 100 characters) [pycodestyle]
actionscontroller.py:311:19 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:312:28 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:313:21 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:314:23 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:315:29 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:316:26 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:322:1 W293 blank line contains whitespace [pycodestyle]
actionscontroller.py:339:101 E501 line too long (108 > 100 characters) [pycodestyle]
actionscontroller.py:343:101 E501 line too long (123 > 100 characters) [pycodestyle]
actionscontroller.py:350:19 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:351:28 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:352:21 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:353:23 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:354:29 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:355:26 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:376:101 E501 line too long (108 > 100 characters) [pycodestyle]
actionscontroller.py:386:101 E501 line too long (104 > 100 characters) [pycodestyle]
actionscontroller.py:389:19 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:390:28 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:391:21 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:392:23 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:393:29 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:394:26 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:400:1 W293 blank line contains whitespace [pycodestyle]
actionscontroller.py:407:101 E501 line too long (108 > 100 characters) [pycodestyle]
actionscontroller.py:411:101 E501 line too long (117 > 100 characters) [pycodestyle]
actionscontroller.py:411:35 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:418:101 E501 line too long (104 > 100 characters) [pycodestyle]
actionscontroller.py:421:19 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:422:28 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:423:21 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:424:23 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:425:29 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:426:26 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:432:1 W293 blank line contains whitespace [pycodestyle]
actionscontroller.py:447:101 E501 line too long (108 > 100 characters) [pycodestyle]
actionscontroller.py:457:19 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:458:28 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:459:21 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:460:23 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:461:29 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:462:26 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:468:1 W293 blank line contains whitespace [pycodestyle]
actionscontroller.py:470:13 E117 over-indented [pycodestyle]
actionscontroller.py:485:101 E501 line too long (112 > 100 characters) [pycodestyle]
actionscontroller.py:495:23 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:496:32 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:497:25 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:498:27 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:499:33 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:500:30 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:521:101 E501 line too long (108 > 100 characters) [pycodestyle]
actionscontroller.py:529:19 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:530:28 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:531:21 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:532:23 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:533:29 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:534:26 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:535:34 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:536:28 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:543:1 W293 blank line contains whitespace [pycodestyle]
actionscontroller.py:558:101 E501 line too long (108 > 100 characters) [pycodestyle]
actionscontroller.py:566:19 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:567:28 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:568:21 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:569:23 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:570:29 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:571:26 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:572:32 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:573:28 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:580:1 W293 blank line contains whitespace [pycodestyle]
actionscontroller.py:587:101 E501 line too long (108 > 100 characters) [pycodestyle]
actionscontroller.py:592:19 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:593:28 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:594:21 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:595:23 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:596:29 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:597:26 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:607:5 E303 too many blank lines (2) [pycodestyle]
actionscontroller.py:617:23 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:618:32 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:619:27 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:620:24 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:621:27 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:622:30 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:623:33 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:624:46 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:624:53 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:625:46 E203 whitespace before ':' [pycodestyle]
actionscontroller.py:647:1 W293 blank line contains whitespace [pycodestyle]
actionscontroller.py:655:1 W293 blank line contains whitespace [pycodestyle]
actionscontroller.py:662:25 W292 no newline at end of file [pycodestyle]
```

After fixing most issues, we are left with a flag of a lambda expression:

```
H:\University\secure-software-development\application\classes\controllers>pylama actionscontroller.py
actionscontroller.py:72:9 E731 do not assign a lambda expression, use a def [pycodestyle]
```

Infosec Folder

authorisation_service.py

```
H:\University\secure-software-development\application\classes\infosec>bandit authorisation_service.py
[main]  INFO    profile include tests: None
[main]  INFO    profile exclude tests: None
[main]  INFO    cli include tests: None
[main]  INFO    cli exclude tests: None
[main]  INFO    running on Python 3.10.6
[node_visitor]  WARNING Unable to find qualified name for module: authorisation_service.py
Run started:2023-07-15 12:57:40.542007

Test results:
        No issues identified.

Code scanned:
        Total lines of code: 57
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
Files skipped (0):
```

```
H:\University\secure-software-development\application\classes\infosec>pylama authorisation_service.py
authorisation_service.py:4:1 E302 expected 2 blank lines, found 0 [pycodestyle]
authorisation_service.py:31:36 W291 trailing whitespace [pycodestyle]
authorisation_service.py:36:1 W293 blank line contains whitespace [pycodestyle]
authorisation_service.py:38:93 W291 trailing whitespace [pycodestyle]
authorisation_service.py:46:1 W293 blank line contains whitespace [pycodestyle]
authorisation_service.py:72:9 W292 no newline at end of file [pycodestyle]
authorisation_service.py:72:1 W293 blank line contains whitespace [pycodestyle]
```

encryption_service.py

```
H:\University\secure-software-development\application\classes\infosec>bandit encryption_service.py
[main]  INFO    profile include tests: None
[main]  INFO    profile exclude tests: None
[main]  INFO    cli include tests: None
[main]  INFO    cli exclude tests: None
[main]  INFO    running on Python 3.10.6
[node_visitor]  WARNING Unable to find qualified name for module: encryption_service.py
Run started:2023-07-15 12:58:16.370057

Test results:
        No issues identified.

Code scanned:
        Total lines of code: 22
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
Files skipped (0):
```

```
H:\University\secure-software-development\application\classes\infosec>pylama encryption_service.py
encryption_service.py:9:1 E302 expected 2 blank lines, found 1 [pycodestyle]
```

input_sanitisation.py

```
H:\University\secure-software-development\application\classes\infosec>bandit input_sanitisation.py
[main]  INFO    profile include tests: None
[main]  INFO    profile exclude tests: None
[main]  INFO    cli include tests: None
[main]  INFO    cli exclude tests: None
[main]  INFO    running on Python 3.10.6
[node_visitor]  WARNING Unable to find qualified name for module: input_sanitisation.py
Run started:2023-07-15 13:18:19.828008

Test results:
        No issues identified.

Code scanned:
        Total lines of code: 138
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
Files skipped (0):
```

```
H:\University\secure-software-development\application\classes\infosec>pylama input_sanitisation.py
input_sanitisation.py:10:1 E302 expected 2 blank lines, found 1 [pycodestyle]
input_sanitisation.py:12:47 E261 at least two spaces before inline comment [pycodestyle]
input_sanitisation.py:14:101 E501 line too long (101 > 100 characters) [pycodestyle]
input_sanitisation.py:18:13 E115 expected an indented block (comment) [pycodestyle]
input_sanitisation.py:24:70 E261 at least two spaces before inline comment [pycodestyle]
input_sanitisation.py:33:1 W293 blank line contains whitespace [pycodestyle]
input_sanitisation.py:37:1 W293 blank line contains whitespace [pycodestyle]
input_sanitisation.py:60:39 E261 at least two spaces before inline comment [pycodestyle]
input_sanitisation.py:67:26 E261 at least two spaces before inline comment [pycodestyle]
input_sanitisation.py:71:1 W293 blank line contains whitespace [pycodestyle]
input_sanitisation.py:72:101 E501 line too long (104 > 100 characters) [pycodestyle]
input_sanitisation.py:72:43 E261 at least two spaces before inline comment [pycodestyle]
input_sanitisation.py:100:1 W293 blank line contains whitespace [pycodestyle]
input_sanitisation.py:103:101 E501 line too long (104 > 100 characters) [pycodestyle]
input_sanitisation.py:109:1 W293 blank line contains whitespace [pycodestyle]
input_sanitisation.py:118:1 W293 blank line contains whitespace [pycodestyle]
input_sanitisation.py:127:1 W293 blank line contains whitespace [pycodestyle]
input_sanitisation.py:136:1 W293 blank line contains whitespace [pycodestyle]
input_sanitisation.py:144:1 W293 blank line contains whitespace [pycodestyle]
input_sanitisation.py:168:31 W292 no newline at end of file [pycodestyle]
```

login_service.py

```
Test results:
>> Issue: [B105:hardcoded_password_string] Possible hardcoded password: ''
   Severity: Low    Confidence: Medium
   CWE: CWE-259 (https://cwe.mitre.org/data/definitions/259.html)
   More Info: https://bandit.readthedocs.io/en/1.7.5/plugins/b105_hardcoded_password_string.html
   Location: login_service.py:16:26
15              self.__username = ''
16              self.__password = ''
17              self.__login_attempts = 0

--------------------------------------------------

Code scanned:
        Total lines of code: 299
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 1
                Medium: 0
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 0
                Medium: 1
                High: 0
Files skipped (0):
```

This flag is a fair assessment by *bandit*. However, whenever any session information about the current user is stored within the login service, it is encrypted using the encryption service. Hence, any passwords or usernames stored cannot be read without the secret key.

```
H:\University\secure-software-development\application\classes\infosec>pylama login_service.py
login_service.py:10:1 W0611 'classes.dbmanager.DBManager' imported but unused [pyflakes]
login_service.py:13:1 E302 expected 2 blank lines, found 1 [pycodestyle]
login_service.py:20:1 W293 blank line contains whitespace [pycodestyle]
login_service.py:28:1 W293 blank line contains whitespace [pycodestyle]
login_service.py:32:1 W293 blank line contains whitespace [pycodestyle]
login_service.py:37:1 W293 blank line contains whitespace [pycodestyle]
login_service.py:41:1 W293 blank line contains whitespace [pycodestyle]
login_service.py:45:1 W293 blank line contains whitespace [pycodestyle]
login_service.py:49:1 W293 blank line contains whitespace [pycodestyle]
login_service.py:58:1 W293 blank line contains whitespace [pycodestyle]
login_service.py:65:101 E501 line too long (108 > 100 characters) [pycodestyle]
login_service.py:68:1 W293 blank line contains whitespace [pycodestyle]
login_service.py:71:101 E501 line too long (107 > 100 characters) [pycodestyle]
login_service.py:112:1 W293 blank line contains whitespace [pycodestyle]
login_service.py:116:101 E501 line too long (122 > 100 characters) [pycodestyle]
login_service.py:117:48 E261 at least two spaces before inline comment [pycodestyle]
login_service.py:180:48 E261 at least two spaces before inline comment [pycodestyle]
login_service.py:229:101 E501 line too long (108 > 100 characters) [pycodestyle]
login_service.py:231:29 E128 continuation line under-indented for visual indent [pycodestyle]
login_service.py:249:1 W293 blank line contains whitespace [pycodestyle]
login_service.py:255:30 E128 continuation line under-indented for visual indent [pycodestyle]
login_service.py:273:1 W293 blank line contains whitespace [pycodestyle]
login_service.py:284:1 W293 blank line contains whitespace [pycodestyle]
login_service.py:289:1 W293 blank line contains whitespace [pycodestyle]
login_service.py:301:1 W293 blank line contains whitespace [pycodestyle]
login_service.py:337:1 W293 blank line contains whitespace [pycodestyle]
login_service.py:341:1 W293 blank line contains whitespace [pycodestyle]
login_service.py:345:1 W293 blank line contains whitespace [pycodestyle]
login_service.py:349:1 W293 blank line contains whitespace [pycodestyle]
login_service.py:353:1 W293 blank line contains whitespace [pycodestyle]
login_service.py:357:1 W391 blank line at end of file [pycodestyle]
```

Logger Folder

auditor.py

```
H:\University\secure-software-development\application\classes\logger>bandit auditor.py
[main]  INFO     profile include tests: None
[main]  INFO     profile exclude tests: None
[main]  INFO     cli include tests: None
[main]  INFO     cli exclude tests: None
[main]  INFO     running on Python 3.10.6
[node_visitor]  WARNING Unable to find qualified name for module: auditor.py
Run started:2023-07-15 12:59:15.724633

Test results:
        No issues identified.

Code scanned:
        Total lines of code: 91
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
Files skipped (0):
```

```
H:\University\secure-software-development\application\classes\logger>pylama auditor.py
auditor.py:7:1 E302 expected 2 blank lines, found 1 [pycodestyle]
auditor.py:13:39 E261 at least two spaces before inline comment [pycodestyle]
auditor.py:20:1 W293 blank line contains whitespace [pycodestyle]
auditor.py:44:55 E261 at least two spaces before inline comment [pycodestyle]
auditor.py:45:44 E261 at least two spaces before inline comment [pycodestyle]
auditor.py:46:54 E261 at least two spaces before inline comment [pycodestyle]
auditor.py:48:1 W293 blank line contains whitespace [pycodestyle]
auditor.py:55:26 W291 trailing whitespace [pycodestyle]
auditor.py:56:1 W293 blank line contains whitespace [pycodestyle]
auditor.py:57:60 W291 trailing whitespace [pycodestyle]
auditor.py:60:36 W291 trailing whitespace [pycodestyle]
auditor.py:67:27 E203 whitespace before ':' [pycodestyle]
auditor.py:68:36 E203 whitespace before ':' [pycodestyle]
auditor.py:69:31 E203 whitespace before ':' [pycodestyle]
auditor.py:70:28 E203 whitespace before ':' [pycodestyle]
auditor.py:71:31 E203 whitespace before ':' [pycodestyle]
auditor.py:72:37 E203 whitespace before ':' [pycodestyle]
auditor.py:73:39 E203 whitespace before ':' [pycodestyle]
auditor.py:74:39 E203 whitespace before ':' [pycodestyle]
auditor.py:78:49 E261 at least two spaces before inline comment [pycodestyle]
auditor.py:80:50 W291 trailing whitespace [pycodestyle]
auditor.py:82:27 E203 whitespace before ':' [pycodestyle]
auditor.py:83:36 E203 whitespace before ':' [pycodestyle]
auditor.py:84:31 E203 whitespace before ':' [pycodestyle]
auditor.py:85:28 E203 whitespace before ':' [pycodestyle]
auditor.py:86:31 E203 whitespace before ':' [pycodestyle]
auditor.py:87:37 E203 whitespace before ':' [pycodestyle]
auditor.py:88:39 E203 whitespace before ':' [pycodestyle]
```

logger.py

```
H:\University\secure-software-development\application\classes\logger>bandit logger.py
[main]  INFO    profile include tests: None
[main]  INFO    profile exclude tests: None
[main]  INFO    cli include tests: None
[main]  INFO    cli exclude tests: None
[main]  INFO    running on Python 3.10.6
[node_visitor]  WARNING Unable to find qualified name for module: logger.py
Run started:2023-07-15 12:59:38.736694

Test results:
        No issues identified.

Code scanned:
        Total lines of code: 84
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
Files skipped (0):
```

```
H:\University\secure-software-development\application\classes\logger>pylama logger.py
logger.py:8:1 E302 expected 2 blank lines, found 1 [pycodestyle]
logger.py:14:1 W293 blank line contains whitespace [pycodestyle]
logger.py:43:51 E261 at least two spaces before inline comment [pycodestyle]
logger.py:46:16 E713 test for membership should be 'not in' [pycodestyle]
logger.py:52:41 E261 at least two spaces before inline comment [pycodestyle]
logger.py:52:42 E262 inline comment should start with '# ' [pycodestyle]
logger.py:55:13 E265 block comment should start with '# ' [pycodestyle]
logger.py:63:55 W291 trailing whitespace [pycodestyle]
logger.py:72:13 E722 do not use bare 'except' [pycodestyle]
logger.py:87:1 W293 blank line contains whitespace [pycodestyle]
```

After fixing most issues, we are left with the following flags:

```
H:\University\secure-software-development\application\classes\logger>pylama logger.py
logger.py:47:16 E713 test for membership should be 'not in' [pycodestyle]
logger.py:73:13 E722 do not use bare 'except' [pycodestyle]
```

Models Folder

country.py

```
Test results:
>> Issue: [B608:hardcoded_sql_expressions] Possible SQL injection vector through string-based query construction.
   Severity: Medium   Confidence: Low
   CWE: CWE-89 (https://cwe.mitre.org/data/definitions/89.html)
   More Info: https://bandit.readthedocs.io/en/1.7.5/plugins/b608_hardcoded_sql_expressions.html
   Location: country.py:38:16
37              # perform database query to update permission attributes.
38              query = "UPDATE countries SET name='" + name + "', updated_at= " + self._updated_at + " WHERE role_id=?"
39              values = (id,)

--------------------------------------------------

Code scanned:
        Total lines of code: 40
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 0
                Medium: 1
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 1
                Medium: 0
                High: 0
Files skipped (0):
```

```
H:\University\secure-software-development\application\classes\models>pylama country.py
country.py:9:1 E302 expected 2 blank lines, found 1 [pycodestyle]
country.py:16:93 E202 whitespace before ')' [pycodestyle]
country.py:19:1 W293 blank line contains whitespace [pycodestyle]
country.py:21:92 E202 whitespace before ')' [pycodestyle]
country.py:22:29 W291 trailing whitespace [pycodestyle]
country.py:23:37 E261 at least two spaces before inline comment [pycodestyle]
country.py:26:1 W293 blank line contains whitespace [pycodestyle]
country.py:28:39 W291 trailing whitespace [pycodestyle]
country.py:29:26 W291 trailing whitespace [pycodestyle]
country.py:30:101 E501 line too long (149 > 100 characters) [pycodestyle]
country.py:30:150 W291 trailing whitespace [pycodestyle]
country.py:30:148 E202 whitespace before ')' [pycodestyle]
country.py:38:101 E501 line too long (112 > 100 characters) [pycodestyle]
country.py:49:64 W291 trailing whitespace [pycodestyle]
country.py:55:39 W291 trailing whitespace [pycodestyle]
```

healthrecord.py

```
Test results:
>> Issue: [B608:hardcoded_sql_expressions] Possible SQL injection vector through string-based query construction.
   Severity: Medium    Confidence: Low
   CWE: CWE-89 (https://cwe.mitre.org/data/definitions/89.html)
   More Info: https://bandit.readthedocs.io/en/1.7.5/plugins/b608_hardcoded_sql_expressions.html
   Location: healthrecord.py:58:16
57                  value = f"'{value}'"
58              query = f"UPDATE record_items SET {field} = {value} WHERE record_id = ?"
59              where = (user_information['record id'],)

--------------------------------------------------

Code scanned:
        Total lines of code: 55
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 0
                Medium: 1
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 1
                Medium: 0
                High: 0
Files skipped (0):
```

```
H:\University\secure-software-development\application\classes\models>pylama healthrecord.py
healthrecord.py:5:1 W0611 'uuid' imported but unused [pyflakes]
healthrecord.py:7:1 E302 expected 2 blank lines, found 1 [pycodestyle]
healthrecord.py:20:101 E501 line too long (128 > 100 characters) [pycodestyle]
healthrecord.py:21:93 W291 trailing whitespace [pycodestyle]
healthrecord.py:23:32 W291 trailing whitespace [pycodestyle]
healthrecord.py:36:101 E501 line too long (115 > 100 characters) [pycodestyle]
healthrecord.py:36:41 E203 whitespace before ':' [pycodestyle]
healthrecord.py:40:1 W293 blank line contains whitespace [pycodestyle]
healthrecord.py:48:64 W291 trailing whitespace [pycodestyle]
healthrecord.py:61:64 W291 trailing whitespace [pycodestyle]
healthrecord.py:67:39 W291 trailing whitespace [pycodestyle]
```

permission.py

```
Test results:
>> Issue: [B608:hardcoded_sql_expressions] Possible SQL injection vector through string-based query construction.
   Severity: Medium   Confidence: Low
   CWE: CWE-89 (https://cwe.mitre.org/data/definitions/89.html)
   More Info: https://bandit.readthedocs.io/en/1.7.5/plugins/b608_hardcoded_sql_expressions.html
   Location: permission.py:29:16
28              # perform database query to update permission attributes.
29              query = "UPDATE permissions SET name='" + name + "', updated_at= " + self._updated_at + " WHERE uuid=?"
30              values = (uuid,)

--------------------------------------------------

Code scanned:
        Total lines of code: 43
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 0
                Medium: 1
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 1
                Medium: 0
                High: 0
Files skipped (0):
```

```
H:\University\secure-software-development\application\classes\models>pylama permission.py
permission.py:13:1 W293 blank line contains whitespace [pycodestyle]
permission.py:15:99 E202 whitespace before ')' [pycodestyle]
permission.py:18:1 W293 blank line contains whitespace [pycodestyle]
permission.py:20:36 W291 trailing whitespace [pycodestyle]
permission.py:21:17 W291 trailing whitespace [pycodestyle]
permission.py:22:101 E501 line too long (136 > 100 characters) [pycodestyle]
permission.py:22:137 W291 trailing whitespace [pycodestyle]
permission.py:22:135 E202 whitespace before ')' [pycodestyle]
permission.py:29:101 E501 line too long (111 > 100 characters) [pycodestyle]
permission.py:40:64 W291 trailing whitespace [pycodestyle]
permission.py:41:1 W293 blank line contains whitespace [pycodestyle]
permission.py:43:38 W291 trailing whitespace [pycodestyle]
permission.py:44:101 E501 line too long (156 > 100 characters) [pycodestyle]
permission.py:44:157 W291 trailing whitespace [pycodestyle]
permission.py:44:155 E202 whitespace before ')' [pycodestyle]
permission.py:47:1 W293 blank line contains whitespace [pycodestyle]
permission.py:52:16 E225 missing whitespace around operator [pycodestyle]
permission.py:55:1 W293 blank line contains whitespace [pycodestyle]
permission.py:61:1 W293 blank line contains whitespace [pycodestyle]
permission.py:63:1 E265 block comment should start with '# ' [pycodestyle]
permission.py:64:1 E265 block comment should start with '# ' [pycodestyle]
permission.py:65:41 W291 trailing whitespace [pycodestyle]
permission.py:67:25 W292 no newline at end of file [pycodestyle]
```

role.py

```
H:\University\secure-software-development\application\classes\models>bandit role.py
[main]  INFO    profile include tests: None
[main]  INFO    profile exclude tests: None
[main]  INFO    cli include tests: None
[main]  INFO    cli exclude tests: None
[main]  INFO    running on Python 3.10.6
[node_visitor]  WARNING Unable to find qualified name for module: role.py
Run started:2023-07-15 13:01:52.919604

Test results:
        No issues identified.

Code scanned:
        Total lines of code: 42
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
Files skipped (0):
```

```
H:\University\secure-software-development\application\classes\models>pylama role.py
role.py:5:1 E302 expected 2 blank lines, found 0 [pycodestyle]
role.py:9:1 W293 blank line contains whitespace [pycodestyle]
role.py:14:12 W291 trailing whitespace [pycodestyle]
role.py:15:17 W291 trailing whitespace [pycodestyle]
role.py:16:101 E501 line too long (131 > 100 characters) [pycodestyle]
role.py:16:132 W291 trailing whitespace [pycodestyle]
role.py:16:130 E202 whitespace before ')' [pycodestyle]
role.py:27:64 W291 trailing whitespace [pycodestyle]
role.py:28:1 W293 blank line contains whitespace [pycodestyle]
role.py:33:16 E225 missing whitespace around operator [pycodestyle]
role.py:36:1 W293 blank line contains whitespace [pycodestyle]
role.py:41:16 E225 missing whitespace around operator [pycodestyle]
role.py:44:1 W293 blank line contains whitespace [pycodestyle]
role.py:49:39 W292 no newline at end of file [pycodestyle]
```

user.py

```
Test results:
>> Issue: [B608:hardcoded_sql_expressions] Possible SQL injection vector through string-based query construction.
   Severity: Medium   Confidence: Low
   CWE: CWE-89 (https://cwe.mitre.org/data/definitions/89.html)
   More Info: https://bandit.readthedocs.io/en/1.7.5/plugins/b608_hardcoded_sql_expressions.html
   Location: user.py:85:16
84                  value = self.__role_service.get_role_id(value)
85                  query = f"UPDATE users SET {field} = {value} WHERE uuid = ?"
86                  where = (user_information['uuid'],)

--------------------------------------------------

Code scanned:
        Total lines of code: 95
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 0
                Medium: 1
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 1
                Medium: 0
                High: 0
Files skipped (0):
```

```
H:\University\secure-software-development\application\classes\models>pylama user.py
user.py:6:1 E302 expected 2 blank lines, found 1 [pycodestyle]
user.py:15:1 W293 blank line contains whitespace [pycodestyle]
user.py:23:101 E501 line too long (125 > 100 characters) [pycodestyle]
user.py:24:101 E501 line too long (139 > 100 characters) [pycodestyle]
user.py:39:27 E203 whitespace before ':' [pycodestyle]
user.py:43:1 W293 blank line contains whitespace [pycodestyle]
user.py:44:1 W293 blank line contains whitespace [pycodestyle]
user.py:45:5 E303 too many blank lines (2) [pycodestyle]
user.py:55:40 E203 whitespace before ':' [pycodestyle]
user.py:62:1 W293 blank line contains whitespace [pycodestyle]
user.py:88:64 W291 trailing whitespace [pycodestyle]
user.py:89:1 W293 blank line contains whitespace [pycodestyle]
user.py:94:16 E225 missing whitespace around operator [pycodestyle]
user.py:98:1 W293 blank line contains whitespace [pycodestyle]
user.py:103:16 E225 missing whitespace around operator [pycodestyle]
user.py:118:1 W391 blank line at end of file [pycodestyle]
```

Sensors Folder

abstract.py

```
H:\University\secure-software-development\application\classes\sensors>bandit abstract.py
[main]  INFO    profile include tests: None
[main]  INFO    profile exclude tests: None
[main]  INFO    cli include tests: None
[main]  INFO    cli exclude tests: None
[main]  INFO    running on Python 3.10.6
[node_visitor]  WARNING Unable to find qualified name for module: abstract.py
Run started:2023-07-15 13:02:40.038160

Test results:
        No issues identified.

Code scanned:
        Total lines of code: 20
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
Files skipped (0):
```

```
H:\University\secure-software-development\application\classes\sensors>pylama abstract.py
abstract.py:9:46 W291 trailing whitespace [pycodestyle]
abstract.py:10:60 W291 trailing whitespace [pycodestyle]
abstract.py:11:28 W291 trailing whitespace [pycodestyle]
abstract.py:23:5 W292 no newline at end of file [pycodestyle]
abstract.py:23:1 W293 blank line contains whitespace [pycodestyle]
```

geigercounter.py

```
H:\University\secure-software-development\application\classes\sensors>bandit geigercounter.py
[main]  INFO    profile include tests: None
[main]  INFO    profile exclude tests: None
[main]  INFO    cli include tests: None
[main]  INFO    cli exclude tests: None
[main]  INFO    running on Python 3.10.6
[node_visitor]  WARNING Unable to find qualified name for module: geigercounter.py
Run started:2023-07-15 13:03:01.067037

Test results:
        No issues identified.

Code scanned:
        Total lines of code: 57
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
Files skipped (0):
```

```
H:\University\secure-software-development\application\classes\sensors>pylama geigercounter.py
geigercounter.py:13:49 E261 at least two spaces before inline comment [pycodestyle]
geigercounter.py:30:1 W293 blank line contains whitespace [pycodestyle]
geigercounter.py:36:1 W293 blank line contains whitespace [pycodestyle]
geigercounter.py:46:1 W293 blank line contains whitespace [pycodestyle]
geigercounter.py:56:1 W293 blank line contains whitespace [pycodestyle]
geigercounter.py:68:4 W292 no newline at end of file [pycodestyle]
geigercounter.py:68:1 W293 blank line contains whitespace [pycodestyle]
```

thermometer.py

```
H:\University\secure-software-development\application\classes\sensors>bandit thermometer.py
[main]  INFO    profile include tests: None
[main]  INFO    profile exclude tests: None
[main]  INFO    cli include tests: None
[main]  INFO    cli exclude tests: None
[main]  INFO    running on Python 3.10.6
[node_visitor]  WARNING Unable to find qualified name for module: thermometer.py
Run started:2023-07-15 13:03:21.670958

Test results:
        No issues identified.

Code scanned:
        Total lines of code: 73
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
Files skipped (0):
```

```
H:\University\secure-software-development\application\classes\sensors>pylama thermometer.py
thermometer.py:13:46 E261 at least two spaces before inline comment [pycodestyle]
thermometer.py:30:1 W293 blank line contains whitespace [pycodestyle]
thermometer.py:45:42 E226 missing whitespace around arithmetic operator [pycodestyle]
thermometer.py:48:1 W293 blank line contains whitespace [pycodestyle]
thermometer.py:55:36 E226 missing whitespace around arithmetic operator [pycodestyle]
thermometer.py:59:36 E226 missing whitespace around arithmetic operator [pycodestyle]
thermometer.py:60:1 W293 blank line contains whitespace [pycodestyle]
thermometer.py:69:46 E226 missing whitespace around arithmetic operator [pycodestyle]
thermometer.py:83:24 W292 no newline at end of file [pycodestyle]
```

Tests Folder

Integration Tests

context.py

```
H:\University\secure-software-development\application\tests\integration>bandit context.py
[main]  INFO     profile include tests: None
[main]  INFO     profile exclude tests: None
[main]  INFO     cli include tests: None
[main]  INFO     cli exclude tests: None
[main]  INFO     running on Python 3.10.6
[node_visitor]  WARNING Unable to find qualified name for module: context.py
Run started:2023-07-15 17:36:00.377616

Test results:
        No issues identified.

Code scanned:
        Total lines of code: 22
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
Files skipped (0):
```

```
H:\University\secure-software-development\application\tests\integration>pylama context.py
context.py:1:4 W291 trailing whitespace [pycodestyle]
context.py:17:1 W0611 'classes.controllers.actionscontroller.ActionsController' imported but unused [pyflakes]
context.py:17:1 E402 module level import not at top of file [pycodestyle]
context.py:18:1 W0611 'classes.sensors.geigercounter.GeigerCounter' imported but unused [pyflakes]
context.py:18:1 E402 module level import not at top of file [pycodestyle]
context.py:19:1 W0611 'classes.sensors.thermometer.Thermometer' imported but unused [pyflakes]
context.py:19:1 E402 module level import not at top of file [pycodestyle]
context.py:20:1 W0611 'classes.logger.logger.Logger' imported but unused [pyflakes]
context.py:20:1 E402 module level import not at top of file [pycodestyle]
context.py:21:1 W0611 'classes.models.user.User' imported but unused [pyflakes]
context.py:21:1 E402 module level import not at top of file [pycodestyle]
context.py:22:1 W0611 'classes.models.healthrecord.HealthRecord' imported but unused [pyflakes]
context.py:22:1 E402 module level import not at top of file [pycodestyle]
context.py:23:1 W0611 'classes.dbmanager.DBManager' imported but unused [pyflakes]
context.py:23:1 E402 module level import not at top of file [pycodestyle]
context.py:24:1 W0611 'classes.commandline_interface.CommandLineInterface' imported but unused [pyflakes]
context.py:24:1 E402 module level import not at top of file [pycodestyle]
context.py:25:1 W0611 'database.DBShape' imported but unused [pyflakes]
context.py:25:1 E402 module level import not at top of file [pycodestyle]
context.py:26:1 W0611 'classes.infosec.encryption_service.Encryption_Service' imported but unused [pyflakes]
context.py:26:1 E402 module level import not at top of file [pycodestyle]
context.py:27:1 W0611 'classes.infosec.input_sanitisation.Input_Sanitisation_Service' imported but unused [pyflakes]
context.py:27:74 W292 no newline at end of file [pycodestyle]
context.py:27:1 E402 module level import not at top of file [pycodestyle]
```

```
H:\University\secure-software-development\application\tests\integration>pylama context.py
context.py:17:1 W0611 'classes.controllers.actionscontroller.ActionsController' imported but unused [pyflakes]
context.py:17:1 E402 module level import not at top of file [pycodestyle]
context.py:18:1 W0611 'classes.sensors.geigercounter.GeigerCounter' imported but unused [pyflakes]
context.py:18:1 E402 module level import not at top of file [pycodestyle]
context.py:19:1 W0611 'classes.sensors.thermometer.Thermometer' imported but unused [pyflakes]
context.py:19:1 E402 module level import not at top of file [pycodestyle]
context.py:20:1 W0611 'classes.logger.logger.Logger' imported but unused [pyflakes]
context.py:20:1 E402 module level import not at top of file [pycodestyle]
context.py:21:1 W0611 'classes.models.user.User' imported but unused [pyflakes]
context.py:21:1 E402 module level import not at top of file [pycodestyle]
context.py:22:1 W0611 'classes.models.healthrecord.HealthRecord' imported but unused [pyflakes]
context.py:22:1 E402 module level import not at top of file [pycodestyle]
context.py:23:1 W0611 'classes.dbmanager.DBManager' imported but unused [pyflakes]
context.py:23:1 E402 module level import not at top of file [pycodestyle]
context.py:24:1 W0611 'classes.commandline_interface.CommandLineInterface' imported but unused [pyflakes]
context.py:24:1 E402 module level import not at top of file [pycodestyle]
context.py:25:1 W0611 'classes.infosec.encryption_service.Encryption_Service' imported but unused [pyflakes]
context.py:25:1 E402 module level import not at top of file [pycodestyle]
context.py:26:1 W0611 'classes.infosec.input_sanitisation.Input_Sanitisation_Service' imported but unused [pyflakes]
context.py:26:1 E402 module level import not at top of file [pycodestyle]
context.py:27:1 W0611 'database.DBShape' imported but unused [pyflakes]
context.py:27:29 W292 no newline at end of file [pycodestyle]
context.py:27:1 E402 module level import not at top of file [pycodestyle]
```

As mentioned previously, within the *imports.py* and *context.py* files, we store libraries and files which we can import into other files from this centralised file, hence "unused" imports are flagged by *pylama*, because we aren't actually using them within this file.

mock.py

```
H:\University\secure-software-development\application\tests\integration>bandit mock.py
[main]  INFO    profile include tests: None
[main]  INFO    profile exclude tests: None
[main]  INFO    cli include tests: None
[main]  INFO    cli exclude tests: None
[main]  INFO    running on Python 3.10.6
[node_visitor]  WARNING Unable to find qualified name for module: mock.py
Run started:2023-07-15 17:36:56.238732

Test results:
        No issues identified.

Code scanned:
        Total lines of code: 105
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
Files skipped (0):
```

```
H:\University\secure-software-development\application\tests\integration>pylama mock.py
mock.py:5:1 E302 expected 2 blank lines, found 1 [pycodestyle]
mock.py:14:1 W293 blank line contains whitespace [pycodestyle]
mock.py:20:1 W293 blank line contains whitespace [pycodestyle]
mock.py:21:1 E302 expected 2 blank lines, found 1 [pycodestyle]
mock.py:30:1 W293 blank line contains whitespace [pycodestyle]
mock.py:31:1 E302 expected 2 blank lines, found 1 [pycodestyle]
mock.py:41:1 E302 expected 2 blank lines, found 1 [pycodestyle]
mock.py:50:1 W293 blank line contains whitespace [pycodestyle]
mock.py:56:1 W293 blank line contains whitespace [pycodestyle]
mock.py:62:1 W293 blank line contains whitespace [pycodestyle]
mock.py:63:27 E201 whitespace after '(' [pycodestyle]
mock.py:68:1 W293 blank line contains whitespace [pycodestyle]
mock.py:69:1 E302 expected 2 blank lines, found 1 [pycodestyle]
mock.py:78:1 W293 blank line contains whitespace [pycodestyle]
mock.py:79:1 E302 expected 2 blank lines, found 1 [pycodestyle]
mock.py:83:1 W293 blank line contains whitespace [pycodestyle]
mock.py:89:1 W293 blank line contains whitespace [pycodestyle]
mock.py:95:1 W293 blank line contains whitespace [pycodestyle]
mock.py:96:1 E302 expected 2 blank lines, found 1 [pycodestyle]
mock.py:105:1 W293 blank line contains whitespace [pycodestyle]
mock.py:106:1 E302 expected 2 blank lines, found 1 [pycodestyle]
mock.py:115:1 W293 blank line contains whitespace [pycodestyle]
mock.py:121:1 W293 blank line contains whitespace [pycodestyle]
mock.py:122:5 W292 no newline at end of file [pycodestyle]
mock.py:122:1 W293 blank line contains whitespace [pycodestyle]
```

tests_admin.py

```
H:\University\secure-software-development\application\tests\integration>bandit tests_admin.py
[main]  INFO    profile include tests: None
[main]  INFO    profile exclude tests: None
[main]  INFO    cli include tests: None
[main]  INFO    cli exclude tests: None
[main]  INFO    running on Python 3.10.6
[node_visitor]  WARNING Unable to find qualified name for module: tests_admin.py
Run started:2023-07-15 17:37:14.663703

Test results:
>> Issue: [B311:blacklist] Standard pseudo-random generators are not suitable for security/cryptographic purposes.
   Severity: Low   Confidence: High
   CWE: CWE-330 (https://cwe.mitre.org/data/definitions/330.html)
   More Info: https://bandit.readthedocs.io/en/1.7.5/blacklists/blacklist_calls.html#b311-random
   Location: tests_admin.py:53:112
52              # test database and logger integration
53              mock_selections = (x for x in ['1', '1', 'test_user', 'astronaut', '01-01-1971', 'US', 'OK', f'username{randint(0, 2**16)}', 'password', 'Y', 'N', '2'])
54              self.cli.ask_for_selection = lambda: next(mock_selections)

--------------------------------------------------

Code scanned:
        Total lines of code: 79
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 1
                Medium: 0
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 1
Files skipped (0):
```

```
H:\University\secure-software-development\application\tests\integration>pylama tests_admin.py
tests_admin.py:4:101 E501 line too long (141 > 100 characters) [pycodestyle]
tests_admin.py:11:1 E302 expected 2 blank lines, found 1 [pycodestyle]
tests_admin.py:53:101 E501 line too long (160 > 100 characters) [pycodestyle]
tests_admin.py:86:101 E501 line too long (159 > 100 characters) [pycodestyle]
tests_admin.py:97:101 E501 line too long (180 > 100 characters) [pycodestyle]
tests_admin.py:101:1 E305 expected 2 blank lines after class or function definition, found 1 [pycodestyle]
```

tests_health_records.py

```
H:\University\secure-software-development\application\tests\integration>bandit tests_health_records.py
[main]  INFO    profile include tests: None
[main]  INFO    profile exclude tests: None
[main]  INFO    cli include tests: None
[main]  INFO    cli exclude tests: None
[main]  INFO    running on Python 3.10.6
[node_visitor]  WARNING Unable to find qualified name for module: tests_health_records.py
Run started:2023-07-15 17:41:39.562961

Test results:
        No issues identified.

Code scanned:
        Total lines of code: 73
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
Files skipped (0):
```

tests_sensors.py

```
H:\University\secure-software-development\application\tests\integration>bandit tests_sensors.py
[main]  INFO    profile include tests: None
[main]  INFO    profile exclude tests: None
[main]  INFO    cli include tests: None
[main]  INFO    cli exclude tests: None
[main]  INFO    running on Python 3.10.6
[node_visitor]  WARNING Unable to find qualified name for module: tests_sensors.py
Run started:2023-07-15 17:42:16.988915

Test results:
        No issues identified.

Code scanned:
        Total lines of code: 45
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
Files skipped (0):
```

```
H:\University\secure-software-development\application\tests\integration>pylama tests_sensors.py
tests_sensors.py:4:101 E501 line too long (143 > 100 characters) [pycodestyle]
tests_sensors.py:8:1 E302 expected 2 blank lines, found 1 [pycodestyle]
tests_sensors.py:40:101 E501 line too long (112 > 100 characters) [pycodestyle]
tests_sensors.py:41:67 E261 at least two spaces before inline comment [pycodestyle]
tests_sensors.py:49:67 E261 at least two spaces before inline comment [pycodestyle]
tests_sensors.py:52:1 E305 expected 2 blank lines after class or function definition, found 1 [pycodestyle]
```

Unit Tests

context.py

```
H:\University\secure-software-development\application\tests\unit>bandit context.py
[main]  INFO    profile include tests: None
[main]  INFO    profile exclude tests: None
[main]  INFO    cli include tests: None
[main]  INFO    cli exclude tests: None
[main]  INFO    running on Python 3.10.6
[node_visitor]  WARNING Unable to find qualified name for module: context.py
Run started:2023-07-15 17:53:41.620345

Test results:
        No issues identified.

Code scanned:
        Total lines of code: 15
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
Files skipped (0):
```

```
H:\University\secure-software-development\application\tests\unit>pylama context.py
context.py:1:4 W291 trailing whitespace [pycodestyle]
context.py:17:1 W0611 'classes.commandline_interface.CommandLineInterface' imported but unused [pyflakes]
context.py:17:1 E402 module level import not at top of file [pycodestyle]
context.py:18:1 W0611 'classes.sensors.geigercounter.GeigerCounter' imported but unused [pyflakes]
context.py:18:1 E402 module level import not at top of file [pycodestyle]
context.py:19:1 W0611 'classes.sensors.thermometer.Thermometer' imported but unused [pyflakes]
context.py:19:1 E402 module level import not at top of file [pycodestyle]
context.py:20:1 W0611 'classes.infosec.authorisation_service.AuthorisationService' imported but unused [pyflakes]
context.py:20:1 E402 module level import not at top of file [pycodestyle]
```

```
H:\University\secure-software-development\application\tests\unit>pylama context.py
context.py:17:1 W0611 'classes.commandline_interface.CommandLineInterface' imported but unused [pyflakes]
context.py:17:1 E402 module level import not at top of file [pycodestyle]
context.py:18:1 W0611 'classes.sensors.geigercounter.GeigerCounter' imported but unused [pyflakes]
context.py:18:1 E402 module level import not at top of file [pycodestyle]
context.py:19:1 W0611 'classes.sensors.thermometer.Thermometer' imported but unused [pyflakes]
context.py:19:1 E402 module level import not at top of file [pycodestyle]
context.py:20:1 W0611 'classes.infosec.authorisation_service.AuthorisationService' imported but unused [pyflakes]
context.py:20:1 E402 module level import not at top of file [pycodestyle]
```

test_role.py

```
H:\University\secure-software-development\application\tests\unit>bandit test_role.py
[main]    INFO    profile include tests: None
[main]    INFO    profile exclude tests: None
[main]    INFO    cli include tests: None
[main]    INFO    cli exclude tests: None
[main]    INFO    running on Python 3.10.6
[node_visitor]   WARNING Unable to find qualified name for module: test_role.py
Run started:2023-07-15 17:54:53.296336

Test results:
        No issues identified.

Code scanned:
        Total lines of code: 18
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
Files skipped (0):
```

```
H:\University\secure-software-development\application\tests\unit>pylama test_role.py
test_role.py:7:1 E302 expected 2 blank lines, found 1 [pycodestyle]
test_role.py:19:1 W293 blank line contains whitespace [pycodestyle]
test_role.py:20:1 E305 expected 2 blank lines after class or function definition, found 1 [pycodestyle]
test_role.py:22:5 W292 no newline at end of file [pycodestyle]
test_role.py:22:1 W293 blank line contains whitespace [pycodestyle]
```

test_authorisation.py

```
H:\University\secure-software-development\application\tests\unit>bandit tests_authorisation.py
[main]  INFO     profile include tests: None
[main]  INFO     profile exclude tests: None
[main]  INFO     cli include tests: None
[main]  INFO     cli exclude tests: None
[main]  INFO     running on Python 3.10.6
[node_visitor]  WARNING Unable to find qualified name for module: tests_authorisation.py
Run started:2023-07-15 17:56:07.403819

Test results:
        No issues identified.

Code scanned:
        Total lines of code: 18
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
Files skipped (0):
```

```
H:\University\secure-software-development\application\tests\unit>pylama tests_authorisation.py
tests_authorisation.py:7:1 E302 expected 2 blank lines, found 1 [pycodestyle]
tests_authorisation.py:19:1 W293 blank line contains whitespace [pycodestyle]
tests_authorisation.py:20:1 E305 expected 2 blank lines after class or function definition, found 1 [pycodestyle]
tests_authorisation.py:22:1 W391 blank line at end of file [pycodestyle]
```

tests_cli.py

```
H:\University\secure-software-development\application\tests\unit>bandit tests_cli.py
[main]    INFO     profile include tests: None
[main]    INFO     profile exclude tests: None
[main]    INFO     cli include tests: None
[main]    INFO     cli exclude tests: None
[main]    INFO     running on Python 3.10.6
[node_visitor]    WARNING Unable to find qualified name for module: tests_cli.py
Run started:2023-07-15 17:56:31.421033

Test results:
        No issues identified.

Code scanned:
        Total lines of code: 20
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
Files skipped (0):
```

```
H:\University\secure-software-development\application\tests\unit>pylama tests_cli.py
tests_cli.py:7:1 E302 expected 2 blank lines, found 1 [pycodestyle]
tests_cli.py:20:54 E261 at least two spaces before inline comment [pycodestyle]
tests_cli.py:21:1 W293 blank line contains whitespace [pycodestyle]
tests_cli.py:25:1 W391 blank line at end of file [pycodestyle]
```

tests_sensors.py

```
H:\University\secure-software-development\application\tests\unit>bandit tests_sensors.py
[main]   INFO    profile include tests: None
[main]   INFO    profile exclude tests: None
[main]   INFO    cli include tests: None
[main]   INFO    cli exclude tests: None
[main]   INFO    running on Python 3.10.6
[node_visitor]  WARNING Unable to find qualified name for module: tests_sensors.py
Run started:2023-07-15 17:56:52.153949

Test results:
        No issues identified.

Code scanned:
        Total lines of code: 29
        Total lines skipped (#nosec): 0

Run metrics:
        Total issues (by severity):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
        Total issues (by confidence):
                Undefined: 0
                Low: 0
                Medium: 0
                High: 0
Files skipped (0):
```

```
H:\University\secure-software-development\application\tests\unit>pylama tests_sensors.py
tests_sensors.py:7:1 E302 expected 2 blank lines, found 1 [pycodestyle]
tests_sensors.py:20:1 E302 expected 2 blank lines, found 1 [pycodestyle]
tests_sensors.py:33:1 E305 expected 2 blank lines after class or function definition, found 1 [pycodestyle]
tests_sensors.py:35:1 W391 blank line at end of file [pycodestyle]
```

References

PyPi (2023) bandit. Available from: https://pypi.org/project/bandit/ [Accessed 15 July 2023].

PyPi (2022) pylama 8.4.1. Available from: https://pypi.org/project/pylama/ [Accessed 15 July 2023].