IT 314
LAB 5
Static Analysis Tool

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Analysis of mypy tool:
Language used: Python

- For installation: `pip install mypy`
- For static analysis of any python file: `python -m mypy filename`

- Repository used for analysis:
  https://github.com/codingforentrepreneurs/eCommerce

1. Manage.py


```
C:\Users\student>cd Downloads

C:\Users\student\Downloads>cd IT314_LAB5

C:\Users\student\Downloads\IT314_LAB5>cd eCommerce

C:\Users\student\Downloads\IT314_LAB5\eCommerce>cd src

C:\Users\student\Downloads\IT314_LAB5\eCommerce\src>python -m mypy manage.py
manage.py:8: error: Cannot find implementation or library stub for module named "django.core.management"  [import]
manage.py:8: note: See https://mypy.readthedocs.io/en/stable/running_mypy.html#missing-imports
manage.py:14: error: Cannot find implementation or library stub for module named "django"  [import]
Found 2 errors in 1 file (checked 1 source file)
```

2. models.py

```
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src>cd orders

C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\orders>python -m mypy models.py
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\ecommerce\aws\utils.py:1: error: Cannot find implementation or library stub for module named "storages.backends.s3boto3"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\ecommerce\aws\download\utils.py:1: error: Library stubs not installed for "boto"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\ecommerce\aws\download\utils.py:5: error: Cannot find implementation or library stub for module named "django.conf"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\ecommerce\aws\download\utils.py:6: error: Library stubs not installed for "boto.s3.connection"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\ecommerce\aws\download\utils.py:6: note: Hint: "python3 -m pip install types-boto"
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\ecommerce\utils.py:7: error: Cannot find implementation or library stub for module named "django.utils"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\ecommerce\utils.py:8: error: Cannot find implementation or library stub for module named "django.utils.text"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:2: error: Cannot find implementation or library stub for module named "django.conf"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:3: error: Cannot find implementation or library stub for module named "django.core.urlresolvers"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:4: error: Cannot find implementation or library stub for module named "django.db"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:5: error: Cannot find implementation or library stub for module named "django.db.models"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:6: error: Cannot find implementation or library stub for module named "django.db.models.signals"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:7: error: Cannot find implementation or library stub for module named "django.contrib.auth.models"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:11: error: Cannot find implementation or library stub for module named "django.core.mail"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:12: error: Cannot find implementation or library stub for module named "django.template.loader"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:13: error: Cannot find implementation or library stub for module named "django.utils"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:69: error: Need type annotation for "REQUIRED_FIELDS" (hint: "REQUIRED_FIELDS: List[<type>] = ...")  [var-annotated]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\products\models.py:3: error: Cannot find implementation or library stub for module named "django.conf"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\products\models.py:4: error: Cannot find implementation or library stub for module named "django.core.files.storage"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\products\models.py:6: error: Cannot find implementation or library stub for module named "django.db"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\products\models.py:7: error: Cannot find implementation or library stub for module named "django.db.models"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\products\models.py:8: error: Cannot find implementation or library stub for module named "django.db.models.signals"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\products\models.py:9: error: Cannot find implementation or library stub for module named "django.urls"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\carts\models.py:2: error: Cannot find implementation or library stub for module named "django.conf"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\carts\models.py:3: error: Cannot find implementation or library stub for module named "django.db"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\carts\models.py:4: error: Cannot find implementation or library stub for module named "django.db.models.signals"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\billing\models.py:1: error: Cannot find implementation or library stub for module named "django.conf"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\billing\models.py:2: error: Cannot find implementation or library stub for module named "django.db"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\billing\models.py:3: error: Cannot find implementation or library stub for module named "django.db.models.signals"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\billing\models.py:4: error: Cannot find implementation or library stub for module named "django.core.urlresolvers"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\billing\models.py:11: error: Library stubs not installed for "stripe"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\billing\models.py:11: note: Hint: "python3 -m pip install types-stripe"
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\billing\models.py:11: note: (or run "mypy --install-types" to install all missing stub packages)
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\addresses\models.py:1: error: Cannot find implementation or library stub for module named "django.db"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\addresses\models.py:2: error: Cannot find implementation or library stub for module named "django.core.urlresolvers"  [import]
models.py:3: error: Cannot find implementation or library stub for module named "django.conf"  [import]
models.py:4: error: Cannot find implementation or library stub for module named "django.db"  [import]
models.py:5: error: Cannot find implementation or library stub for module named "django.db.models"  [import]
models.py:6: error: Cannot find implementation or library stub for module named "django.db.models.signals"  [import]
models.py:6: note: See https://mypy.readthedocs.io/en/stable/running_mypy.html#missing-imports
models.py:7: error: Cannot find implementation or library stub for module named "django.core.urlresolvers"  [import]
models.py:8: error: Cannot find implementation or library stub for module named "django.utils"  [import]
Found 38 errors in 2 files (checked 1 source file)
```

3. apps.py

```
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\orders>python -m mypy apps.py
apps.py:1: error: Cannot find implementation or library stub for module named "django.apps"  [import]
apps.py:1: note: See https://mypy.readthedocs.io/en/stable/running_mypy.html#missing-imports
Found 1 error in 1 file (checked 1 source file)
```

4. urls.py

```
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\orders>python -m mypy urls.py
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\ecommerce\aws\utils.py:1: error: Cannot find implementation or library stub for module named "storages.backends.s3boto3"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\ecommerce\aws\download\utils.py:1: error: Library stubs not installed for "boto"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\ecommerce\aws\download\utils.py:5: error: Cannot find implementation or library stub for module named "django.conf"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\ecommerce\aws\download\utils.py:6: error: Library stubs not installed for "boto.s3.connection"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\ecommerce\aws\download\utils.py:6: note: Hint: "python3 -m pip install types-boto"
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\ecommerce\utils.py:7: error: Cannot find implementation or library stub for module named "django.utils"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\ecommerce\utils.py:8: error: Cannot find implementation or library stub for module named "django.utils.text"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\products\models.py:3: error: Cannot find implementation or library stub for module named "django.conf"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\products\models.py:4: error: Cannot find implementation or library stub for module named "django.core.files.storage"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\products\models.py:6: error: Cannot find implementation or library stub for module named "django.db"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\products\models.py:7: error: Cannot find implementation or library stub for module named "django.db.models"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\products\models.py:8: error: Cannot find implementation or library stub for module named "django.db.models.signals"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\products\models.py:9: error: Cannot find implementation or library stub for module named "django.urls"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:2: error: Cannot find implementation or library stub for module named "django.conf"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:3: error: Cannot find implementation or library stub for module named "django.core.urlresolvers"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:4: error: Cannot find implementation or library stub for module named "django.db"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:5: error: Cannot find implementation or library stub for module named "django.db.models"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:6: error: Cannot find implementation or library stub for module named "django.db.models.signals"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:7: error: Cannot find implementation or library stub for module named "django.contrib.auth.models"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:11: error: Cannot find implementation or library stub for module named "django.core.mail"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:12: error: Cannot find implementation or library stub for module named "django.template.loader"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:13: error: Cannot find implementation or library stub for module named "django.utils"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:69: error: Need type annotation for "REQUIRED_FIELDS" (hint: "REQUIRED_FIELDS: List[<type>] = ...")  [var-annotated]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\carts\models.py:2: error: Cannot find implementation or library stub for module named "django.conf"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\carts\models.py:3: error: Cannot find implementation or library stub for module named "django.db"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\carts\models.py:4: error: Cannot find implementation or library stub for module named "django.db.models.signals"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\billing\models.py:1: error: Cannot find implementation or library stub for module named "django.conf"  [import]
```

5. Admin.py

```
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src>cd billing

C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\billing>python -m mypy admin.py
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\ecommerce\utils.py:7: error: Cannot find implementation or library stub for module named "django.utils"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\ecommerce\utils.py:8: error: Cannot find implementation or library stub for module named "django.utils.text"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:2: error: Cannot find implementation or library stub for module named "django.conf"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:3: error: Cannot find implementation or library stub for module named "django.core.urlresolvers"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:4: error: Cannot find implementation or library stub for module named "django.db"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:5: error: Cannot find implementation or library stub for module named "django.db.models"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:6: error: Cannot find implementation or library stub for module named "django.db.models.signals"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:7: error: Cannot find implementation or library stub for module named "django.contrib.auth.models"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:11: error: Cannot find implementation or library stub for module named "django.core.mail"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:12: error: Cannot find implementation or library stub for module named "django.template.loader"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:13: error: Cannot find implementation or library stub for module named "django.utils"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:69: error: Need type annotation for "REQUIRED_FIELDS" (hint: "REQUIRED_FIELDS: List[<type>] = ...")  [var-annotated]
models.py:1: error: Cannot find implementation or library stub for module named "django.conf"  [import]
models.py:2: error: Cannot find implementation or library stub for module named "django.db"  [import]
models.py:3: error: Cannot find implementation or library stub for module named "django.db.models.signals"  [import]
models.py:4: error: Cannot find implementation or library stub for module named "django.core.urlresolvers"  [import]
models.py:11: error: Library stubs not installed for "stripe"  [import]
models.py:11: note: Hint: "python3 -m pip install types-stripe"
models.py:11: note: (or run "mypy --install-types" to install all missing stub packages)
admin.py:1: error: Cannot find implementation or library stub for module named "django.contrib"  [import]
admin.py:1: note: See https://mypy.readthedocs.io/en/stable/running_mypy.html#missing-imports
Found 18 errors in 3 files (checked 1 source file)
```

6. Forms.py

```
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src>cd addresses

C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\addresses>python -m mypy forms.py
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\ecommerce\utils.py:7: error: Cannot find implementation or library stub for module named "django.utils"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\ecommerce\utils.py:8: error: Cannot find implementation or library stub for module named "django.utils.text"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:2: error: Cannot find implementation or library stub for module named "django.conf"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:3: error: Cannot find implementation or library stub for module named "django.core.urlresolvers"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:4: error: Cannot find implementation or library stub for module named "django.db"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:5: error: Cannot find implementation or library stub for module named "django.db.models"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:6: error: Cannot find implementation or library stub for module named "django.db.models.signals"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:7: error: Cannot find implementation or library stub for module named "django.contrib.auth.models"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:11: error: Cannot find implementation or library stub for module named "django.core.mail"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:12: error: Cannot find implementation or library stub for module named "django.template.loader"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:13: error: Cannot find implementation or library stub for module named "django.utils"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\accounts\models.py:69: error: Need type annotation for "REQUIRED_FIELDS" (hint: "REQUIRED_FIELDS: List[<type>] = ...")  [var-annotated]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\billing\models.py:1: error: Cannot find implementation or library stub for module named "django.conf"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\billing\models.py:2: error: Cannot find implementation or library stub for module named "django.db"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\billing\models.py:3: error: Cannot find implementation or library stub for module named "django.db.models.signals"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\billing\models.py:4: error: Cannot find implementation or library stub for module named "django.core.urlresolvers"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\billing\models.py:11: error: Library stubs not installed for "stripe"  [import]
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\billing\models.py:11: note: Hint: "python3 -m pip install types-stripe"
C:\Users\student\Downloads\IT314_LAB5\eCommerce\src\billing\models.py:11: note: (or run "mypy --install-types" to install all missing stub packages)
models.py:1: error: Cannot find implementation or library stub for module named "django.db"  [import]
models.py:2: error: Cannot find implementation or library stub for module named "django.core.urlresolvers"  [import]
forms.py:1: error: Cannot find implementation or library stub for module named "django"  [import]
forms.py:1: note: See https://mypy.readthedocs.io/en/stable/running_mypy.html#missing-imports
Found 20 errors in 3 files (checked 1 source file)
```

Analysis of mypy tool:

- Mypy is a static type checker for Python.It acts as a linter that allows us to write statistically typed code and verify the soundness of types.
- It shows errors and warnings that can be solved for efficient code.
- When mypy encounters an import statement, it will first attempt to locate that module or type stubs for that module in the file system.
- Mypy is able to successfully follow the imports and type check the module.
- It will also give errors if some library files which are needed is missing.
- Mypy has a strict module that enables a number of additional checks.