

Group 19: Web Based Project Management Tool for Small Business

Unit Testing

Unit testing involves testing individual components or units of software in isolation to ensure they function correctly. It's an automated process where small parts of the code, like functions or classes, are tested independently. This practice helps catch bugs early, encourages better code quality, and serves as documentation for how each component should behave. Ultimately, unit testing contributes to more reliable and maintainable software.

Phase 1: Test Plan

The documentation of the test plan should cover aspects like objectives, schedule, deliverables, which features should be tested, pass/fail criteria and responsibilities.

Phase 2: Implementation

1. Design and create test cases for individual components.
2. Execution of test cases
3. Fix the errors in code

1. Accounts Testing:

1.1 URLs Testing of Accounts App

```

class TestURLs(TestCase):
    from django.urls import reverse, resolve
    from accounts.views import (
        landing_view, login_view, register_view, register_view_owner, register_view_employee, home_view
    )

    def test_landing_url(self):
        url = reverse('landing')
        self.assertEqual(resolve(url).func, landing_view)

    def test_login_url(self):
        url = reverse('login')
        self.assertEqual(resolve(url).func, login_view)

    def test_register_view(self):
        url = reverse('register')
        self.assertEqual(resolve(url).func, register_view)

    def test_register_view_owner(self):
        url = reverse('reg_owner')
        self.assertEqual(resolve(url).func, register_view_owner)
  
```

```

[04/Dec/2023 17:21:24] "GET /static/img/login-background.jpg HTTP/1.1" 304 0
(ojasa) PS C:\Users\Ojas Patel\Desktop\Software1.2\project_management_system_group_19\projectManagementSystem\Project> python manage.py test
Found 5 test(s).
Creating test database for alias 'default'...
System check identified no issues (0 silenced).
.....
Ran 5 tests in 0.011s

OK
Destroying test database for alias 'default'...
(ojasa) PS C:\Users\Ojas Patel\Desktop\Software1.2\project_management_system_group_19\projectManagementSystem\Project>
  
```

1.2 Models Testing of Accounts App

```

manager_user.set_password('managerpassword') # Set the password explicitly
manager_user.save() # Save the user after setting the password
self.assertTrue(manager_user.check_password('managerpassword')) # Check the password

def test_employee_creation(self):
    # Test creating an employee
    test_owner = owner.objects.create(
        email='owner@example.com',
        first_name='Alice',
        contact='9876543210',
        company_name='ABC Corp'
    )

    employee_user = employee.objects.create(
        email='employee@example.com',
        first_name='Charlie',
        contact='1111111111',
        company_name=test_owner
    )

    employee_user.set_password('employeepassword')
    employee_user.save() # Save the user after setting the password
    self.assertTrue(employee_user.check_password('employeepassword')) # Check the password
    self.assertEqual(employee_user.email, 'employee@example.com')
    self.assertEqual(employee_user.first_name, 'Charlie')
    self.assertEqual(employee_user.contact, '1111111111')
    self.assertEqual(employee_user.company_name, test_owner)
  
```

```

Destroying test database for alias 'default'...
(ojasa) PS C:\Users\Ojas Patel\Desktop\Software1.2\project_management_system_group_19\projectManagementSystem\Project> python manage.py test
Found 4 test(s).
Creating test database for alias 'default'...
System check identified no issues (0 silenced).
....
Ran 4 tests in 5.195s

OK
Destroying test database for alias 'default'...
(ojasa) PS C:\Users\Ojas Patel\Desktop\Software1.2\project_management_system_group_19\projectManagementSystem\Project>
  
```

1.2 ViewsTesting of Accounts App

```

23 self.assertEqual(response.status_code, 302) # Assuming a redirect after logout
24
25 def test_home_view_authenticated(self):
26     self.client.login(email='test123@gmail.com', password='Sojn@574')
27     response = self.client.get(reverse('dashboard'))
28     self.assertEqual(response.status_code, 200) # Assuming home page should return 200 for authenticated user
29     # You 2 days ago - while testing done
30
31 def test_register_view_authenticated(self):
32     self.client.login(email='test123@gmail.com', password='Sojn@574')
33     response = self.client.get(reverse('register'))
34     self.assertRedirects(response, '/dashboard', 302, 301)
35
36 def test_register_view_unauthenticated(self):
37     self.client.login(email='test13@gmail.com', password='Sojn@574')
38     response = self.client.get(reverse('register')) #checking else condition
39     self.assertTemplateUsed(response, 'register.html')
40
41 def test_register_view_authenticated(self):
42     self.client.login(email='test123@gmail.com', password='Sojn@574')
43     response = self.client.get(reverse('register'))
44     self.assertRedirects(response, '/dashboard', 302, 301)
45
46 def test_register_view_owner_authenticated(self):
47     response = self.client.post(reverse('reg_owner'), {'first_name': 'ojas', 'email': 'test12@gmail.com', 'password1': 'Sojn@574', 'password2': 'Sojn@574'})
48     self.assertTemplateUsed(response, 'owner/register_as_admin.html')
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```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS GITLENS

Destroying test database for alias 'default'...

(ojas) PS C:\Users\Ojas Patel\Desktop\Software1.2\project_management_system_group_19\projectManagementSystem\Project> python manage.py test

Found 10 test(s).

Creating test database for alias 'default'...

System check identified no issues (0 silenced).

.....

Ran 10 tests in 7.573s

OK

Destroying test database for alias 'default'...

(ojas) PS C:\Users\Ojas Patel\Desktop\Software1.2\project_management_system_group_19\projectManagementSystem\Project>

2. Dashboard Testing:

2.1 URLs Testing of Accounts App

```

project_management_system_group_19 > projectManagementSystem > Project > accounts > tests > test_dashboard_urls.py > ...
1 from django.test import SimpleTestCase
2 from django.urls import reverse, resolve
3 from dashboard.views import CreateProject, dashboard
4
5 You, 4 seconds ago | 1 author (You)
6 class TestUrls(SimpleTestCase):
7     def test_create_project_url_resolves(self):
8         url = reverse('createProject')
9         self.assertEqual(resolve(url).func, CreateProject)
10
11     def test_dashboard_owner_url_resolves(self):
12         url = reverse('Owner_dashboard')
13         self.assertEqual(resolve(url).func, dashboard)
14
15
16 PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS GITLENS
17
18 OK
19 Destroying test database for alias 'default'...
20 (ojas) PS C:\Users\Ojas Patel\Desktop\Software1.2\project_management_system_group_19\projectManagementSystem\Project> python manage.py test
21 Found 2 test(s).
22 System check identified no issues (0 silenced).
23 ..
24 Ran 2 tests in 0.008s
25
26 OK
27 (ojas) PS C:\Users\Ojas Patel\Desktop\Software1.2\project_management_system_group_19\projectManagementSystem\Project>
  
```

2.2 Models Testing of Accounts App

```

project_management_system_group_19 > projectManagementSystem > Project > accounts > tests > test_dashboard_models.py > ...
69 class MessageModelTest(TestCase):
70     @classmethod
71     def setUpTestData(cls):
72         ..... message.objects.create(
73             ..... chatID='test-chat-id',
74             ..... prevMessage='Previous Message',
75             ..... text='Test Message Content',
76             ..... senderName='Sender',
77             ..... senderEmail='sender@example.com',
78             ..... role='E'
79         )
80
81     def test_chatID_max_length(self):
82         msg = message.objects.get(chatID='test-chat-id')
83         max_length = msg._meta.get_field('chatID').max_length
84         self.assertEqual(max_length, 15)
85
86     def test_senderEmail_unique(self):
87         msg = message.objects.get(chatID='test-chat-id')
88         is_unique = msg._meta.get_field('senderEmail').unique
89         self.assertFalse(is_unique)
90
91
92 PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS GITLENS
93
94 Destroying test database for alias 'default'...
95 (ojas) PS C:\Users\Ojas Patel\Desktop\Software1.2\project_management_system_group_19\projectManagementSystem\Project> python manage.py test
96 Found 4 test(s).
97 Creating test database for alias 'default'...
98 System check identified no issues (0 silenced).
99 ....
100 Ran 4 tests in 0.004s
101
102 OK
103 Destroying test database for alias 'default'...
104 (ojas) PS C:\Users\Ojas Patel\Desktop\Software1.2\project_management_system_group_19\projectManagementSystem\Project>
  
```

2.3 Views Testing of Accounts App

The screenshot shows a VS Code editor with a Python file named `test_dashboard_view.py` open. The file contains three test functions: `test_dashboard_view_owner`, `test_dashboard_view_manager`, and `test_dashboard_view_employee`. Each function uses `self.client` to perform HTTP requests and `self.assertEqual` to verify the response status and template used.

```

43 employee_email= employee@example.com ,
44 projectID=self.project,
45 managerName='Test Manager',
46 managerEmail='manager@example.com',
47 late=False,
48 decline=False,
49 status='I'
50 )
51
52 You, 2 days ago • unit testing done
53
54 def test_dashboard_view_owner(self):
55     self.client.login(email='owner@gmail.com', password='Owner@123')
56     response = self.client.get('/dashboard_owner/')
57     self.assertEqual(response.status_code, 200)
58     self.assertTemplateUsed(response, 'owner/dashboard_owner.html')
59
60 def test_dashboard_view_manager(self):
61     self.client.login(email='manager@gmail.com', password='Manager@123')
62     response = self.client.get('/dashboard/')
63     self.assertEqual(response.status_code, 200)
64     self.assertTemplateUsed(response, 'manager/dashboard_manager.html')
65
66 def test_dashboard_view_employee(self):
67     self.client.login(email='employee@gmail.com', password='Emp1@123')
68     response = self.client.get('/dashboard/')

```

The terminal at the bottom shows the output of running `python manage.py test`:

```

OK
(ojas) PS C:\Users\Ojas Patel\Desktop\Software1.2\project_management_system_group_19\projectManagementSystem\Project> python manage.py test
Found 3 test(s).
Creating test database for alias 'default'...
System check identified no issues (0 silenced).
...
Ran 3 tests in 5.517s

OK
Destroying test database for alias 'default'...
(ojas) PS C:\Users\Ojas Patel\Desktop\Software1.2\project_management_system_group_19\projectManagementSystem\Project>

```