

--- test\_!add\_account.py ---

# File: test\_!add\_account.py

# Purpose: Unit tests for the !add\_account command.

from unittest.mock import patch

import logging, unittest

from test\_init import BaseTestSetup, CustomTextTestRunner # Import the shared setup

"""

File: test\_!add\_account.py

Purpose: This file contains unit tests for the !add\_account command in the Discord bot.

The tests validate both successful and error scenarios, ensuring the account is added successfully or errors are handled properly.

Tests:

- Positive: Simulates the !add\_account command and verifies the account is added correctly.
- Negative: Simulates an error while adding the account.

"""

class TestAddAccountCommand(BaseTestSetup):

@patch('DataObjects.AccountDAO.AccountDAO.add\_account')

async def test\_add\_account\_success(self, mock\_add\_account):

"""Test the add\_account command when it succeeds."""

logging.info("Starting test: test\_add\_account\_success")

# Mock the DAO method to simulate successful account addition

mock\_add\_account.return\_value = True

```
command = self.bot.get_command("add_account")

self.assertIsNotNone(command)

await command(self.ctx, "testuser", "password123", "example.com")


expected_message = "Account for example.com added successfully."
self.ctx.send.assert_called_with(expected_message)

logging.info("Verified successful account addition.")
```

```
@patch('DataObjects.AccountDAO.AccountDAO.add_account')

async def test_add_account_error(self, mock_add_account):

    """Test the add_account command when it encounters an error."""

    logging.info("Starting test: test_add_account_error")


    # Mock the DAO method to simulate an error during account addition
    mock_add_account.return_value = False


    command = self.bot.get_command("add_account")

    await command(self.ctx, "testuser", "password123", "example.com")


    self.ctx.send.assert_called_with("Failed to add account for example.com.")

    logging.info("Verified error handling during account addition.")
```

```
if __name__ == "__main__":

    unittest.main(testRunner=CustomTextTestRunner(verbosity=2))
```

```
--- test_!close_browser.py ---
```

```
import logging, unittest
```

```
from unittest.mock import patch
```

```
from test_init import BaseTestSetup, CustomTextTestRunner
```

```
"""
```

File: test\_!close\_browser.py

Purpose: This file contains unit tests for the !close\_browser command in the Discord bot.

The tests validate both successful and error scenarios, ensuring the browser closes properly or errors are handled gracefully.

Tests:

- Positive: Simulates the !close\_browser command and verifies the browser closes correctly.
- Negative: Simulates an error during browser closure and ensures it is handled gracefully.

```
"""
```

```
class TestCloseBrowserCommand(BaseTestSetup):
```

```
    @patch('entity.BrowserEntity.BrowserEntity.close_browser')
```

```
    async def test_close_browser_success(self, mock_close_browser):
```

```
        """Test the close_browser command when it succeeds."""
```

```
        logging.info("Starting test: test_close_browser_success")
```

```
        # Simulate successful browser closure
```

```
        mock_close_browser.return_value = "Browser closed."
```

```
        # Retrieve the close_browser command from the bot
```

```
command = self.bot.get_command("close_browser")
```

```
self.assertIsNotNone(command)
```

```
# Call the command
```

```
await command(self.ctx)
```

```
# Verify the expected message was sent to the user
```

```
expected_message = "Browser closed."
```

```
self.ctx.send.assert_called_with(expected_message)
```

```
logging.info("Verified successful browser closure.")
```

```
@patch('entity.BrowserEntity.BrowserEntity.close_browser')
```

```
async def test_close_browser_error(self, mock_close_browser):
```

```
    """Test the close_browser command when it encounters an error."""
```

```
    logging.info("Starting test: test_close_browser_error")
```

```
# Simulate a failure during browser closure
```

```
mock_close_browser.side_effect = Exception("Failed to close browser")
```

```
# Retrieve the close_browser command from the bot
```

```
command = self.bot.get_command("close_browser")
```

```
self.assertIsNotNone(command)
```

```
# Call the command
```

```
await command(self.ctx)
```

```
# Verify the correct error message is sent
```

```
self.ctx.send.assert_called_with("Failed to close browser") # Error message handled  
logging.info("Verified error handling during browser closure.")
```

```
if __name__ == "__main__":  
    # Use the custom test runner to display 'Unit test passed'  
    unittest.main(testRunner=CustomTextTestRunner(verbosity=2))
```

--- test\_!delete\_account.py ---

```
import logging, unittest
```

```
from unittest.mock import patch
```

```
from test_init import BaseTestSetup, CustomTextTestRunner
```

"""

File: test\_!delete\_account.py

Purpose: This file contains unit tests for the !delete\_account command in the Discord bot.

The tests validate both successful and error scenarios, ensuring the bot deletes the account properly or handles errors.

Tests:

- Positive: Simulates the !delete\_account command and verifies the account is deleted successfully.
- Negative: Simulates an error during account deletion and ensures it is handled gracefully.

"""

```
class TestDeleteAccountCommand(BaseTestSetup):
```

```
    @patch('DataObjects.AccountDAO.AccountDAO.delete_account')
```

```

async def test_delete_account_success(self, mock_delete_account):

    """Test the delete_account command when it succeeds."""

    logging.info("Starting test: test_delete_account_success")

    mock_delete_account.return_value = True # Simulate successful deletion

    command = self.bot.get_command("delete_account")

    self.assertIsNotNone(command)

    await command(self.ctx, '123') # Simulate passing account ID '123'

    expected_message = "Account with ID 123 deleted successfully."

    self.ctx.send.assert_called_with(expected_message)

    logging.info("Verified successful account deletion.")

@patch('DataObjects.AccountDAO.AccountDAO.delete_account')
async def test_delete_account_error(self, mock_delete_account):

    """Test the delete_account command when it encounters an error."""

    logging.info("Starting test: test_delete_account_error")

    mock_delete_account.return_value = False # Simulate failure in deletion

    command = self.bot.get_command("delete_account")

    self.assertIsNotNone(command)

    await command(self.ctx, '999') # Simulate passing a non-existent account ID '999'

    expected_message = "Failed to delete account with ID 999."

    self.ctx.send.assert_called_with(expected_message)

```

```
logging.info("Verified error handling during account deletion.")
```

```
if __name__ == "__main__":
```

```
    # Use the custom test runner to display 'Unit test passed'
```

```
    unittest.main(testRunner=CustomTextTestRunner(verbosity=2))
```

```
--- test_fetch_account_by_website.py ---
```

```
import unittest, logging
```

```
from unittest.mock import patch
```

```
from test_init import BaseTestSetup, CustomTextTestRunner
```

```
class TestFetchAccountByWebsiteCommand(BaseTestSetup):
```

```
    @patch('DataObjects.AccountDAO.AccountDAO.fetch_account_by_website')
```

```
    async def test_fetch_account_by_website_success(self, mock_fetch_account_by_website):
```

```
        """Test the fetch_account_by_website command when it succeeds."""
```

```
        logging.info("Starting test: test_fetch_account_by_website_success")
```

```
        mock_fetch_account_by_website.return_value = ('testuser', 'password123')
```

```
        command = self.bot.get_command("fetch_account_by_website")
```

```
        self.assertIsNotNone(command)
```

```
        await command(self.ctx, 'example.com')
```

```
        expected_message = 'Account found for example.com: Username: testuser, Password:
```

```
password123'
```

```
self.ctx.send.assert_called_with(expected_message)
```

```
logging.info("Verified successful account fetch.")
```

```
@patch('DataObjects.AccountDAO.AccountDAO.fetch_account_by_website')
```

```
async def test_fetch_account_by_website_error(self, mock_fetch_account_by_website):
```

```
    """Test the fetch_account_by_website command when it encounters an error."""
```

```
    logging.info("Starting test: test_fetch_account_by_website_error")
```

```
    mock_fetch_account_by_website.return_value = None
```

```
    command = self.bot.get_command("fetch_account_by_website")
```

```
    self.assertIsNotNone(command)
```

```
    await command(self.ctx, 'nonexistent.com')
```

```
    expected_message = 'No account found for nonexistent.com.'
```

```
    self.ctx.send.assert_called_with(expected_message)
```

```
    logging.info("Verified error handling for nonexistent account.")
```

```
if __name__ == "__main__":
```

```
    unittest.main(testRunner=CustomTextTestRunner(verbosity=2))
```

```
--- test_!fetch_all_accounts.py ---
```

```
# File: test_!fetch_all_accounts.py
```

```
# Purpose: Unit tests for the !fetch_all_accounts command.
```

```
from unittest.mock import patch
```

```
import logging, unittest
```



```

from test_init import BaseTestSetup, CustomTextTestRunner

class TestFetchAllAccountsCommand(BaseTestSetup):

    @patch('DataObjects.AccountDAO.AccountDAO.fetch_all_accounts')

    async def test_fetch_all_accounts_success(self, mock_fetch_all_accounts):

        """Test the fetch_all_accounts command when it succeeds."""

        logging.info("Starting test: test_fetch_all_accounts_success")

        mock_fetch_all_accounts.return_value = [("1", "testuser", "password", "example.com")]

        command = self.bot.get_command("fetch_all_accounts")

        self.assertIsNotNone(command)

        await command(self.ctx)

        # Correct the expected message

        expected_message = "Accounts:\nID: 1, Username: testuser, Password: password, Website:
example.com"

        self.ctx.send.assert_called_with(expected_message)

        logging.info("Verified successful fetch.")

    @patch('DataObjects.AccountDAO.AccountDAO.fetch_all_accounts') # Correct path

    async def test_fetch_all_accounts_error(self, mock_fetch_all_accounts):

        """Test the fetch_all_accounts command when it encounters an error."""

        logging.info("Starting test: test_fetch_all_accounts_error")

        # Simulate an error

```

```
mock_fetch_all_accounts.side_effect = Exception("Database error")
```

```
command = self.bot.get_command("fetch_all_accounts")
```

```
await command(self.ctx)
```

```
# Verify that the correct error message is sent
```

```
self.ctx.send.assert_called_with("Error fetching accounts.")
```

```
logging.info("Verified error handling.")
```

```
if __name__ == "__main__":
```

```
    unittest.main(testRunner=CustomTextTestRunner(verbosity=2))
```

```
--- test_!launch_browser.py ---
```

```
import logging, unittest
```

```
from unittest.mock import patch
```

```
from test_init import BaseTestSetup, CustomTextTestRunner
```

```
"""
```

File: test\_!launch\_browser.py

Purpose: This file contains unit tests for the !launch\_browser command in the Discord bot.

The tests validate both successful and error scenarios, ensuring the browser launches properly or errors are handled gracefully.

Tests:

- Positive: Simulates the !launch\_browser command and verifies the browser launches correctly.

- Negative: Simulates an error during browser launch and ensures it is handled gracefully.

"""

```
class TestLaunchBrowserCommand(BaseTestSetup):
```

```
    @patch('entity.BrowserEntity.BrowserEntity.launch_browser')
```

```
    async def test_launch_browser_success(self, mock_launch_browser):
```

```
        """Test the launch_browser command when it succeeds."""
```

```
        logging.info("Starting test: test_launch_browser_success")
```

```
        # Simulate successful browser launch
```

```
        mock_launch_browser.return_value = "Browser launched."
```

```
        # Retrieve the launch_browser command from the bot
```

```
        command = self.bot.get_command("launch_browser")
```

```
        self.assertIsNotNone(command)
```

```
        # Call the command
```

```
        await command(self.ctx)
```

```
        # Verify the expected message was sent to the user
```

```
        expected_message = "Browser launched."
```

```
        self.ctx.send.assert_called_with(expected_message)
```

```
        logging.info("Verified successful browser launch.")
```

```
    @patch('entity.BrowserEntity.BrowserEntity.launch_browser')
```

```
    async def test_launch_browser_error(self, mock_launch_browser):
```

```
"""Test the launch_browser command when it encounters an error."""
```

```
logging.info("Starting test: test_launch_browser_error")
```

```
# Simulate a failure during browser launch
```

```
mock_launch_browser.side_effect = Exception("Failed to launch browser")
```

```
# Retrieve the launch_browser command from the bot
```

```
command = self.bot.get_command("launch_browser")
```

```
self.assertIsNotNone(command)
```

```
# Call the command
```

```
await command(self.ctx)
```

```
# Verify the correct error message is sent
```

```
self.ctx.send.assert_called_with("Failed to launch browser") # Error message handled
```

```
logging.info("Verified error handling during browser launch.")
```

```
if __name__ == "__main__":
```

```
# Use the custom test runner to display 'Unit test passed'
```

```
unittest.main(testRunner=CustomTextTestRunner(verbosity=2))
```

```
--- test_!navigate_to_website.py ---
```

```
import logging, unittest
```

```
from unittest.mock import patch
```

```
from test_init import BaseTestSetup, CustomTextTestRunner
```

"""

File: test\_!navigate\_to\_website.py

Purpose: This file contains unit tests for the !navigate\_to\_website command in the Discord bot.

The tests validate both successful and error scenarios, ensuring the bot navigates to the website correctly or handles errors.

"""

```
class TestNavigateToWebsiteCommand(BaseTestSetup):
```

```
    @patch('entity.BrowserEntity.BrowserEntity.navigate_to_website')
```

```
    async def test_navigate_to_website_success(self, mock_navigate_to_website):
```

```
        """Test the navigate_to_website command when it succeeds."""
```

```
        logging.info("Starting test: test_navigate_to_website_success")
```

```
        # Simulate successful navigation
```

```
        mock_navigate_to_website.return_value = "Navigated to https://example.com."
```

```
        # Retrieve the navigate_to_website command from the bot
```

```
        command = self.bot.get_command("navigate_to_website")
```

```
        self.assertIsNotNone(command)
```

```
        # Call the command
```

```
        await command(self.ctx, "https://example.com")
```

```
        # Verify the expected message was sent to the user
```

```
        expected_message = "Navigated to https://example.com."
```

```
self.ctx.send.assert_called_with(expected_message)
```

```
logging.info("Verified successful website navigation.")
```

```
@patch('entity.BrowserEntity.BrowserEntity.navigate_to_website')
```

```
async def test_navigate_to_website_error(self, mock_navigate_to_website):
```

```
    """Test the navigate_to_website command when it encounters an error."""
```

```
    logging.info("Starting test: test_navigate_to_website_error")
```

```
    # Simulate a failure during navigation
```

```
    mock_navigate_to_website.side_effect = Exception("Failed to navigate to the website.")
```

```
    # Retrieve the navigate_to_website command from the bot
```

```
    command = self.bot.get_command("navigate_to_website")
```

```
    self.assertIsNotNone(command)
```

```
    # Call the command
```

```
    await command(self.ctx, "https://invalid-url.com")
```

```
    # Verify the correct error message is sent
```

```
    self.ctx.send.assert_called_with("Failed to navigate to the website.") # Error message handled
```

```
    logging.info("Verified error handling during website navigation.")
```

```
if __name__ == "__main__":
```

```
    # Use the custom test runner to display 'Unit test passed'
```

```
    unittest.main(testRunner=CustomTextTestRunner(verbosity=2))
```

```
--- test_!project_help.py ---
```

```
import logging, unittest
```

```
from test_init import BaseTestSetup, CustomTextTestRunner
```

```
from unittest.mock import call
```

```
"""
```

File: test\_!project\_help.py

Purpose: This file contains unit tests for the !project\_help command in the Discord bot.

The tests validate both successful and error scenarios, ensuring the bot provides the correct help message and handles errors properly.

Tests:

- Positive: Simulates the !project\_help command and verifies the correct help message is sent.
- Negative: Simulates an error scenario and ensures the error is handled gracefully.

```
"""
```

```
class TestStopBotCommand(BaseTestSetup):
```

```
    async def test_project_help_success(self):
```

```
        """Test the project help command when it successfully returns the help message."""
```

```
        logging.info("Starting test: test_project_help_success")
```

```
        # Simulate calling the project_help command
```

```
        logging.info("Simulating the project_help command call.")
```

```
        command = self.bot.get_command("project_help")
```

```
        self.assertIsNotNone(command, "project_help command is not registered.") # Ensure the  
command is registered
```

```
        await command(self.ctx)
```

```

# Check both the control message and help message were sent
expected_calls = [
    call('Command recognized, passing data to control.'), # First message sent by the bot
    call(help_message) # Second message: the actual help message
]

self.ctx.send.assert_has_calls(expected_calls, any_order=False) # Ensure the messages are
sent in the correct order

logging.info("Verified that both the control and help messages were sent.")


async def test_project_help_error(self):
    """Test the project help command when it encounters an error during execution."""
    logging.info("Starting test: test_project_help_error")

    # Simulate calling the project_help command and an error occurring
    logging.info("Simulating the project_help command call.")

    self.ctx.send.side_effect = Exception("Error during project_help execution.") # Simulate an
error

    command = self.bot.get_command("project_help")

    self.assertIsNotNone(command, "project_help command is not registered.") # Ensure the
command is registered

    # Act & Assert: Expect the exception to be raised
    with self.assertRaises(Exception):
        await command(self.ctx)

```



```
logging.info("Verified that an error occurred and was handled.")
```

```
# Expected help message
```

```
help_message = (
```

```
    "Here are the available commands:\n"
```

```
    "!project_help - Get help on available commands.\n"
```

```
    "!fetch_all_accounts - Fetch all stored accounts.\n"
```

```
    "!add_account 'username' 'password' 'website' - Add a new account to the database.\n"
```

```
    "!fetch_account_by_website 'website' - Fetch account details by website.\n"
```

```
    "!delete_account 'account_id' - Delete an account by its ID.\n"
```

```
    "!launch_browser - Launch the browser.\n"
```

```
    "!close_browser - Close the browser.\n"
```

```
    "!navigate_to_website 'url' - Navigate to a specified website.\n"
```

```
    "!login 'website' - Log in to a website (e.g., !login bestbuy).\n"
```

```
    "!get_price 'url' - Check the price of a product on a specified website.\n"
```

```
    "!start_monitoring_price 'url' 'frequency' - Start monitoring a product's price at a specific interval  
(frequency in minutes).\n"
```

```
    "!stop_monitoring_price - Stop monitoring the product's price.\n"
```

```
    "!check_availability 'url' - Check availability for a restaurant or service.\n"
```

```
    "!monitor_availability 'url' 'frequency' - Monitor availability at a specific interval.\n"
```

```
    "!stop_monitoring_availability - Stop monitoring availability.\n"
```

```
    "!stop_bot - Stop the bot.\n"
```

```
)
```

```
if __name__ == "__main__":
```

```
    # Use the custom test runner to display 'Unit test passed'
```

```
    unittest.main(testRunner=CustomTextTestRunner(verbosity=2))
```

```
--- test_!stop_bot.py ---
```

```
import logging, unittest
```

```
from unittest.mock import AsyncMock, call, patch
```

```
from test_init import BaseTestSetup, CustomTextTestRunner
```

```
"""
```

File: test\_!stop\_bot.py

Purpose: This file contains unit tests for the !stop\_bot command in the Discord bot.

The tests validate both successful and error scenarios, ensuring the bot correctly shuts down or handles errors during shutdown.

Tests:

- Positive: Simulates the !stop\_bot command and verifies the bot shuts down correctly.
- Negative: Simulates an error during shutdown and ensures it is handled gracefully.

```
"""
```

```
class TestStopBotCommand(BaseTestSetup):
```

```
    async def test_stop_bot_success(self):
```

```
        """Test the stop bot command when it successfully shuts down."""
```

```
        logging.info("Starting test: test_stop_bot_success")
```

```
        # Patch the bot's close method on the ctx.bot (since bot is retrieved from ctx dynamically)
```

```
        with patch.object(self.ctx.bot, 'close', new_callable=AsyncMock) as mock_close:
```

```
            # Simulate calling the stop_bot command
```

```
            logging.info("Simulating the stop_bot command call.")
```

```

command = self.bot.get_command("stop_bot")

    self.assertIsNotNone(command, "stop_bot command is not registered.") # Ensure the
command is registered

    await command(self.ctx)


# Check if the correct messages were sent
expected_calls = [

    call('Command recognized, passing data to control.'), # First message sent by the bot

    call('The bot is shutting down...') # Second message confirming the shutdown

]

    self.ctx.send.assert_has_calls(expected_calls, any_order=False) # Ensure the messages
are sent in the correct order

    logging.info("Verified that both expected messages were sent to the user.")


# Check if bot.close() was called on the ctx.bot
mock_close.assert_called_once()

    logging.info("Verified that the bot's close method was called once.")


async def test_stop_bot_error(self):

    """Test the stop bot command when it encounters an error during shutdown."""

    logging.info("Starting test: test_stop_bot_error")


# Patch the bot's close method to raise an exception
with patch.object(self.ctx.bot, 'close', new_callable=AsyncMock) as mock_close:

    mock_close.side_effect = Exception("Error stopping bot") # Simulate an error


# Simulate calling the stop_bot command

```

```

logging.info("Simulating the stop_bot command call.")

command = self.bot.get_command("stop_bot")

    self.assertIsNotNone(command, "stop_bot command is not registered.") # Ensure the
command is registered


# Act & Assert: Expect the exception to be raised
with self.assertRaises(Exception):
    await command(self.ctx)


logging.info("Verified that an error occurred and was handled correctly.")


# Ensure ctx.send was still called with the shutdown message before the error occurred
self.ctx.send.assert_called_with("The bot is shutting down...")

logging.info("Verified that 'The bot is shutting down...' message was sent despite the error.")


# Verify that the close method was still attempted
mock_close.assert_called_once()

logging.info("Verified that the bot's close method was called even though it raised an error.")


if __name__ == "__main__":
    # Use the custom test runner to display 'Unit test passed'
    unittest.main(testRunner=CustomTextTestRunner(verbosity=2))

```

--- test\_init.py ---

# Purpose: This file contains common setup code for all test cases.

```

import sys, os, discord, logging, unittest

sys.path.append(os.path.dirname(os.path.dirname(os.path.abspath(__file__))))

from unittest.mock import AsyncMock

from utils.MyBot import MyBot


# Setup logging configuration

logging.basicConfig(level=logging.INFO, format='%(asctime)s - %(levelname)s - %(message)s')


class CustomTextTestResult(unittest.TextTestResult):

    """Custom test result to output 'Unit test passed' instead of 'ok'."""

    def addSuccess(self, test):

        super().addSuccess(test)

        self.stream.write("Unit test passed\n") # Custom success message

        self.stream.flush()


class CustomTextTestRunner(unittest.TextTestRunner):

    """Custom test runner that uses the custom result class."""

    resultclass = CustomTextTestResult


class BaseTestSetup(unittest.IsolatedAsyncioTestCase):

    """Base setup class for initializing bot and mock context for all tests."""

    async def asyncSetUp(self):

        """Setup the bot and mock context before each test."""

        logging.info("Setting up the bot and mock context for testing...")

        intents = discord.Intents.default()

        intents.message_content = True

```

```
self.bot = MyBot(command_prefix="!", intents=intents)

self.ctx = AsyncMock()

self.ctx.send = AsyncMock()

self.ctx.bot = self.bot # Mock the bot property in the context

await self.bot.setup_hook() # Ensure commands are registered
```

--- \_\_init\_\_.py ---

#empty init file