

```
--- main.py ---
```

```
from utils.MyBot import MyBot
```

```
from utils.Config import Config
```

```
import discord
```

```
intents = discord.Intents.default()
```

```
intents.message_content = True # Enable reading message content
```

```
# Initialize and run the bot
```

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

```
    bot = MyBot(command_prefix="!", intents=intents, case_insensitive=True)
```

```
    print("Bot is starting...")
```

```
    bot.run(Config.DISCORD_TOKEN) # Run the bot with your token
```

```
--- AccountBoundary.py ---
```

```
from discord.ext import commands
```

```
from control.AccountControl import AccountControl
```

```
class AccountBoundary(commands.Cog):
```

```
    def __init__(self):
```

```
        self.control = AccountControl() # Initialize control object
```

```
    @commands.command(name="fetch_all_accounts")
```

```
    async def fetch_all_accounts(self, ctx):
```

```
        await ctx.send("Command recognized, passing data to control.")
```

```
# Pass the command to the control object
```

```
commandToPass = "fetch_all_accounts"
```

```
result = self.control.receive_command(commandToPass)
```

```
# Send the result (prepared by control) back to the user
```

```
await ctx.send(result)
```

```
@commands.command(name="fetch_account_by_website")
```

```
async def fetch_account_by_website(self, ctx, website: str):
```

```
    await ctx.send(f"Command recognized, passing data to control for website {website}.")
```

```
# Pass the command and website to control
```

```
commandToPass = "fetch_account_by_website"
```

```
result = self.control.receive_command(commandToPass, website)
```

```
# Send the result (prepared by control) back to the user
```

```
await ctx.send(result)
```

```
@commands.command(name="add_account")
```

```
async def add_account(self, ctx, username: str, password: str, website: str):
```

```
    await ctx.send("Command recognized, passing data to control.")
```

```
# Pass the command and account details to control
```

```
commandToPass = "add_account"
```

```
result = self.control.receive_command(commandToPass, username, password, website)
```

```
# Send the result (prepared by control) back to the user
```

```
await ctx.send(result)
```

```
@commands.command(name="delete_account")
```

```
async def delete_account(self, ctx, account_id: int):
```

```
    await ctx.send(f"Command recognized, passing data to control to delete account with ID  
{account_id}.")
```

```
# Pass the command and account ID to control
```

```
commandToPass = "delete_account"
```

```
result = self.control.receive_command(commandToPass, account_id)
```

```
# Send the result (prepared by control) back to the user
```

```
await ctx.send(result)
```

```
--- AvailabilityBoundary.py ---
```

```
from discord.ext import commands
```

```
from control.AvailabilityControl import AvailabilityControl
```

```
class AvailabilityBoundary(commands.Cog):
```

```
    def __init__(self):
```

```
        # Initialize control objects directly
```

```
        self.availability_control = AvailabilityControl()
```

```
@commands.command(name="check_availability")
```

```
async def check_availability(self, ctx, url: str, date_str=None):
```

```
    await ctx.send("Command recognized, passing data to control.")
```

```
    # Pass the command and data to the control layer using receive_command
```

```
    command_to_pass = "check_availability"
```

```
    result = await self.availability_control.receive_command(command_to_pass, url, date_str)
```

```
    # Send the result back to the user
```

```
    await ctx.send(result)
```

```
@commands.command(name="monitor_availability")
```

```
async def monitor_availability(self, ctx, url: str, date_str=None, frequency: int = 15):
```

```
    await ctx.send("Command recognized, passing data to control.")
```

```
    # Pass the command and data to the control layer using receive_command
```

```
    command_to_pass = "monitor_availability"
```

```
    response = await self.availability_control.receive_command(command_to_pass, url, date_str,  
frequency)
```

```
    # Send the result back to the user
```

```
    await ctx.send(response)
```

```
@commands.command(name="stop_monitoring_availability")
```

```
async def stop_monitoring(self, ctx):
```

```
    await ctx.send("Command recognized, passing data to control.")
```

```
# Pass the command to the control layer using receive_command

command_to_pass = "stop_monitoring_availability"

response = self.availability_control.receive_command(command_to_pass)


# Send the result back to the user

await ctx.send(response)
```

--- BrowserBoundary.py ---

```
from discord.ext import commands
```

```
from control.BrowserControl import BrowserControl
```

```
class BrowserBoundary(commands.Cog):
```

```
    def __init__(self):
```

```
        self.browser_control = BrowserControl() # Initialize the control object
```

```
@commands.command(name='launch_browser')
```

```
    async def launch_browser(self, ctx):
```

```
        # Inform the user that the command is recognized
```

```
        await ctx.send("Command recognized, passing the data to control object.")
```

```
        commandToPass = "launch_browser"
```

```
        result = self.browser_control.receive_command(commandToPass) # Pass data to the control
object
```

```
        await ctx.send(result) # Send the result back to the user
```

```
@commands.command(name="close_browser")
```

```

async def stop_bot(self, ctx):

    # Inform the user that the command is recognized

    await ctx.send("Command recognized, passing the data to control object.")


    commandToPass = "close_browser"

    result = self.browser_control.receive_command(commandToPass) # Pass data to the control
object

    await ctx.send(result) # Send the result back to the user

```

--- HelpBoundary.py ---

```

from discord.ext import commands

```

```

from control.HelpControl import HelpControl

```

```

class HelpBoundary(commands.Cog):

```

```

    def __init__(self):

```

```

        self.control = HelpControl() # Initialize control object

```

```

    @commands.command(name="project_help")

```

```

    async def project_help(self, ctx):

```

```

        await ctx.send("Command recognized, passing data to control.")

```

```

        # Pass the command to the control object

```

```

        commandToPass = "project_help"

```

```

        response = self.control.receive_command(commandToPass)

```

```

        # Send the response back to the user

```

```
await ctx.send(response)
```

```
--- LoginBoundary.py ---
```

```
from discord.ext import commands
```

```
from control.LoginControl import LoginControl
```

```
class LoginBoundary(commands.Cog):
```

```
    def __init__(self):
```

```
        self.login_control = LoginControl()
```

```
    @commands.command(name='login')
```

```
    async def login(self, ctx, site: str):
```

```
        await ctx.send("Command recognized, passing data to control.")
```

```
        # Pass the command and site to control
```

```
        commandToPass = "login"
```

```
        result = await self.login_control.receive_command(commandToPass, site)
```

```
        # Send the result back to the user
```

```
        await ctx.send(result)
```

```
--- NavigationBoundary.py ---
```

```
from discord.ext import commands
```

```
from control.NavigationControl import NavigationControl
```

```

class NavigationBoundary(commands.Cog):

    def __init__(self):
        self.navigation_control = NavigationControl()           # Initialize the control object

    @commands.command(name='navigate_to_website')
    async def navigate_to_website(self, ctx, url: str=None):
        await ctx.send("Command recognized, passing the data to control object.")    # Inform the
user that the command is recognized

        commandToPass = "navigate_to_website"

        result = self.navigation_control.receive_command(commandToPass, url)         # Pass the
command and URL to the control object

        await ctx.send(result)                                                       # Send the result back to the user

```

--- PriceBoundary.py ---

```

from discord.ext import commands
from control.PriceControl import PriceControl

```

```

class PriceBoundary(commands.Cog):

    def __init__(self):
        # Initialize control objects directly
        self.price_control = PriceControl()

    @commands.command(name='get_price')
    async def get_price(self, ctx, url: str=None):

```



```
"""Command to get the price from the given URL."""
```

```
await ctx.send("Command recognized, passing data to control.")
```

```
# Pass the command to the control layer
```

```
command_to_pass = "get_price"
```

```
result = await self.price_control.receive_command(command_to_pass, url)
```

```
await ctx.send(result)
```

```
@commands.command(name='start_monitoring_price')
```

```
async def start_monitoring_price(self, ctx, url: str = None, frequency: int = 20):
```

```
    """Command to monitor price at given frequency."""
```

```
        await ctx.send(f"Command recognized, starting price monitoring at {url} every {frequency}  
second(s).")
```

```
# Pass the command and data to the control layer
```

```
command_to_pass = "monitor_price"
```

```
response = await self.price_control.receive_command(command_to_pass, url, frequency)
```

```
await ctx.send(response)
```

```
@commands.command(name='stop_monitoring_price')
```

```
async def stop_monitoring_price(self, ctx):
```

```
    """Command to stop monitoring the price."""
```

```
await ctx.send("Command recognized, passing data to control.")
```

```
# Pass the command to the control layer
```

```
command_to_pass = "stop_monitoring_price"
```

```
response = self.price_control.receive_command(command_to_pass)
```

```
await ctx.send(response)
```

```
--- StopBoundary.py ---
```

```
from discord.ext import commands
```

```
from control.StopControl import StopControl
```

```
class StopBoundary(commands.Cog):
```

```
    def __init__(self):
```

```
        self.control = StopControl() # Initialize control object
```

```
    @commands.command(name="stop_bot")
```

```
    async def stop_bot(self, ctx):
```

```
        await ctx.send("Command recognized, passing data to control.")
```

```
        # Pass the command to the control object
```

```
        commandToPass = "stop_bot"
```

```
        result = await self.control.receive_command(commandToPass, ctx)
```

```
        print(result) # Send the result back to the Terminal. since the bot is shut down, it won't be able  
to send the message back to the user.
```

```
--- __init__.py ---
```

```
#empty init file
```

```
--- AccountControl.py ---
```

```
from DataObjects.AccountDAO import AccountDAO
```

```
class AccountControl:
```

```
    def __init__(self):
```

```
self.account_dao = AccountDAO() # DAO for database operations
```

```
def receive_command(self, command_data, *args):
```

```
    """Handle all account-related commands and process business logic."""
```

```
    print("Data received from boundary:", command_data)
```

```
    if command_data == "fetch_all_accounts":
```

```
        return self.fetch_all_accounts()
```

```
    elif command_data == "fetch_account_by_website":
```

```
        website = args[0] if args else None
```

```
        return self.fetch_account_by_website(website)
```

```
    elif command_data == "add_account":
```

```
        username, password, website = args if args else (None, None, None)
```

```
        return self.add_account(username, password, website)
```

```
    elif command_data == "delete_account":
```

```
        account_id = args[0] if args else None
```

```
        return self.delete_account(account_id)
```

```
    else:
```

```
        result = "Invalid command."
```

```
        print(result)
```

```
        return result
```

```
def add_account(self, username: str, password: str, website: str):
```

```
"""Add a new account to the database."""
```

```
self.account_dao.connect()
```

```
result = self.account_dao.add_account(username, password, website)
```

```
self.account_dao.close()
```

```
    result_message = f"Account for {website} added successfully." if result else f"Failed to add  
account for {website}."
```

```
    print(result_message)
```

```
    return result_message
```

```
def delete_account(self, account_id: int):
```

```
    """Delete an account by ID."""
```

```
    self.account_dao.connect()
```

```
    try:
```

```
        result = self.account_dao.delete_account(account_id)
```

```
    except Exception as e:
```

```
        print(f"Error deleting account: {e}")
```

```
        return "Error deleting account."
```

```
    self.account_dao.reset_id_sequence()
```

```
    self.account_dao.close()
```

```
    result_message = f"Account with ID {account_id} deleted successfully." if result else f"Failed to  
delete account with ID {account_id}."
```

```
    print(result_message)
```

```
    return result_message
```

```
def fetch_all_accounts(self):
```

```

"""Fetch all accounts using the DAO."""

self.account_dao.connect()

try:

    accounts = self.account_dao.fetch_all_accounts()

except Exception as e:

    return "Error fetching accounts."

self.account_dao.close()


if accounts:

    account_list = "\n".join([f"ID: {acc[0]}, Username: {acc[1]}, Password: {acc[2]}, Website: {acc[3]}" for acc in accounts])

    result_message = f"Accounts:\n{account_list}"

else:

    result_message = "No accounts found."


print(result_message)

return result_message


def fetch_account_by_website(self, website: str):

    """Fetch an account by website."""

    try:

        self.account_dao.connect()

        account = self.account_dao.fetch_account_by_website(website)

        self.account_dao.close()


        # Logic to format the result within the control layer

        if account:

```

```
    return f"Account found for {website}: Username: {account[0]}, Password: {account[1]}"
```

```
else:
```

```
    return f"No account found for {website}."
```

```
except Exception as e:
```

```
    return f"Error: {str(e)}"
```

```
--- AvailabilityControl.py ---
```

```
import asyncio
```

```
from entity.AvailabilityEntity import AvailabilityEntity
```

```
from datetime import datetime
```

```
class AvailabilityControl:
```

```
    def __init__(self):
```

```
        self.availability_entity = AvailabilityEntity() # Initialize the entity
```

```
        self.is_monitoring = False # Monitor state
```

```
        self.results = [] # List to store monitoring results
```

```
    async def receive_command(self, command_data, *args):
```

```
        """Handle all commands related to availability."""
```

```
        print("Data received from boundary:", command_data)
```

```
        if command_data == "check_availability":
```

```
            url = args[0]
```

```
            date_str = args[1] if len(args) > 1 else None
```

```
            return await self.check_availability(url, date_str)
```

```
elif command_data == "monitor_availability":  
    print(f"Monitoring availability at {url} every {frequency} second(s).")  
    url = args[0]  
    date_str = args[1] if len(args) > 1 else None  
    frequency = args[2] if len(args) > 2 else 15  
    return await self.start_monitoring_availability(url, date_str, frequency)
```

```
elif command_data == "stop_monitoring_availability":  
    return self.stop_monitoring()
```

```
else:  
    return "Invalid command."
```

```
async def check_availability(self, url: str, date_str=None):  
    """Handle availability check and export results."""  
    # Call the entity to check availability  
    availability_info = await self.availability_entity.check_availability(url, date_str)  
  
    # Prepare the result  
    try:  
        result = f"Checked availability: {availability_info}"  
    except Exception as e:  
        result = f"Failed to check availability: {str(e)}"  
    print(result)
```

```
# Create a DTO (Data Transfer Object) for export
```

```
data_dto = {  
    "command": "check_availability",  
    "url": url,  
    "result": result,  
    "entered_date": datetime.now().strftime('%Y-%m-%d'),  
    "entered_time": datetime.now().strftime('%H:%M:%S')  
}
```

```
# Export data to Excel/HTML via the entity
```

```
self.availability_entity.export_data(data_dto)  
  
return result
```

```
async def start_monitoring_availability(self, url: str, date_str=None, frequency=15):
```

```
    """Start monitoring availability at a specified frequency."""
```

```
    if self.is_monitoring:
```

```
        result = "Already monitoring availability."
```

```
        print(result)
```

```
        return result
```

```
self.is_monitoring = True # Set monitoring to active
```

```
try:
```

```
    while self.is_monitoring:
```

```
        # Call entity to check availability
```

```
        availability_info = await self.availability_entity.check_availability(url, date_str)
```



```
# Prepare and log the result
```

```
result = f"Checked availability: {availability_info}"
```

```
print(result)
```

```
self.results.append(result)
```

```
# Create a DTO (Data Transfer Object) for export
```

```
data_dto = {
```

```
    "command": "start_monitoring_availability",
```

```
    "url": url,
```

```
    "result": result,
```

```
    "entered_date": datetime.now().strftime('%Y-%m-%d'),
```

```
    "entered_time": datetime.now().strftime('%H:%M:%S')
```

```
}
```

```
# Export data to Excel/HTML via the entity
```

```
self.availability_entity.export_data(data_dto)
```

```
# Wait for the specified frequency before checking again
```

```
await asyncio.sleep(frequency)
```

```
except Exception as e:
```

```
    error_message = f"Failed to monitor availability: {str(e)}"
```

```
    print(error_message)
```

```
    self.results.append(error_message)
```

```
    return error_message
```

```
return self.results
```

```

def stop_monitoring(self):
    """Stop monitoring availability."""
    self.is_monitoring = False # Set monitoring to inactive

    try:
        result = "Monitoring stopped. Collected results:" if self.results else "No data collected."
    except Exception as e:
        result = f"Failed to stop monitoring: {str(e)}"

    print(result)

    return self.results if self.results else [result]

```

--- BrowserControl.py ---

```

from entity.BrowserEntity import BrowserEntity

```

```

class BrowserControl:

```

```

    def __init__(self):
        # Initialize the entity object inside the control layer
        self.browser_entity = BrowserEntity()

    def receive_command(self, command_data):
        # Validate the command

        print("Data Received from boundary object: ", command_data)

        if command_data == "launch_browser":

```

```

# Call the entity to perform the actual operation
try:
    result = self.browser_entity.launch_browser()
    return result
except Exception as e:
    return str(e) # Return the error message

elif command_data == "close_browser":
    # Call the entity to perform the close operation
    try:
        result = self.browser_entity.close_browser()
        return result
    except Exception as e:
        return str(e) # Return the error message

else:
    return "Invalid command."

```

--- HelpControl.py ---

```

class HelpControl:
    def receive_command(self, command_data):
        """Handles the command and returns the appropriate message."""
        print("Data received from boundary:", command_data)

        if command_data == "project_help":
            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"

)

return help_message

else:

return "Invalid command."

--- LoginControl.py ---

from control.AccountControl import AccountControl

```
from entity.BrowserEntity import BrowserEntity
```

```
from utils.css_selectors import Selectors
```

```
class LoginControl:
```

```
    def __init__(self):
```

```
        self.browser_entity = BrowserEntity()
```

```
        self.account_control = AccountControl() # Manages account data
```

```
    async def receive_command(self, command_data, site=None):
```

```
        """Handle login command and perform business logic."""
```

```
        print("Data received from boundary:", command_data)
```

```
        if command_data == "login" and site:
```

```
            # Fetch account credentials from the entity
```

```
            account_info = self.account_control.fetch_account_by_website(site)
```

```
            if not account_info:
```

```
                return f"No account found for {site}"
```

```
            username, password = account_info[0], account_info[1]
```

```
            print(f"Username: {username}, Password: {password}")
```

```
            # Get the URL from the CSS selectors
```

```
            url = Selectors.get_selectors_for_url(site).get('url')
```

```
            print(url)
```

```
            if not url:
```

```
                return f"URL for {site} not found."
```

```
# Perform the login process via the entity
```

```
try:
```

```
    result = await self.browser_entity.perform_login(url, username, password)
```

```
except Exception as e:
```

```
    result = str(e)
```

```
    return result
```

```
else:
```

```
    return "Invalid command or site."
```

```
--- NavigationControl.py ---
```

```
from entity.BrowserEntity import BrowserEntity
```

```
from utils.css_selectors import Selectors
```

```
class NavigationControl:
```

```
    def __init__(self):
```

```
        # Initialize the entity object inside the control layer
```

```
        self.browser_entity = BrowserEntity()
```

```
    def receive_command(self, command_data, url=None):
```

```
        # Validate the command
```

```
        print("Data Received from boundary object: ", command_data)
```

```
        if command_data == "navigate_to_website":
```

```
            if not url:
```

```
                selectors = Selectors.get_selectors_for_url("google")
```

```
                url = selectors.get('url')
```

```
if not url:
```

```
    return "No URL provided, and default URL for google could not be found."
```

```
print("URL not provided, default URL for Google is: " + url)
```

```
try:
```

```
    result = self.browser_entity.navigate_to_website(url) # Call the entity to perform the actual  
operation
```

```
except Exception as e:
```

```
    result = str(e)
```

```
    return result
```

```
else:
```

```
    return "Invalid command."
```

```
--- PriceControl.py ---
```

```
import asyncio
```

```
from datetime import datetime
```

```
from entity.PriceEntity import PriceEntity
```

```
from utils.css_selectors import Selectors
```

```
class PriceControl:
```

```
    def __init__(self):
```

```
        self.price_entity = PriceEntity() # Initialize PriceEntity for fetching and export
```

```
        self.is_monitoring = False # Monitoring flag
```

```
        self.results = [] # Store monitoring results
```

```
    async def receive_command(self, command_data, *args):
```

```
        """Handle all price-related commands and process business logic."""
```

```
print("Data received from boundary:", command_data)
```

```
if command_data == "get_price":
```

```
    url = args[0] if args else None
```

```
    return await self.get_price(url)
```

```
elif command_data == "monitor_price":
```

```
    url = args[0] if args else None
```

```
    frequency = args[1] if len(args) > 1 else 20
```

```
    return await self.start_monitoring_price(url, frequency)
```

```
elif command_data == "stop_monitoring_price":
```

```
    return self.stop_monitoring()
```

```
else:
```

```
    return "Invalid command."
```

```
async def get_price(self, url: str):
```

```
    """Handle fetching the price from the entity."""
```

```
    # If no URL is provided, default to BestBuy
```

```
    if not url:
```

```
        selectors = Selectors.get_selectors_for_url("bestbuy")
```

```
        url = selectors.get('priceUrl')
```

```
    if not url:
```

```
        return "No URL provided, and default URL for BestBuy could not be found."
```

```
    print("URL not provided, default URL for BestBuy is: " + url)
```



```
# Fetch the price from the entity
```

```
try:
```

```
    result = self.price_entity.get_price_from_page(url)
```

```
except Exception as e:
```

```
    result = f"Failed to fetch price: {str(e)}"
```

```
data_dto = {
```

```
    "command": "monitor_price",
```

```
    "url": url,
```

```
    "result": result,
```

```
    "entered_date": datetime.now().strftime('%Y-%m-%d'),
```

```
    "entered_time": datetime.now().strftime('%H:%M:%S')
```

```
}
```

```
    # Pass the DTO to PriceEntity to handle export
```

```
self.price_entity.export_data(data_dto)
```

```
return result
```

```
async def start_monitoring_price(self, url: str = None, frequency=20):
```

```
    """Start monitoring the price at a given interval."""
```

```
    if self.is_monitoring:
```

```
        return "Already monitoring prices."
```

```
self.is_monitoring = True
```

```
previous_price = None
```

try:

while self.is_monitoring:

Fetch the current price

if not url:

selectors = Selectors.get_selectors_for_url("bestbuy")

url = selectors.get('priceUrl')

if not url:

return "No URL provided, and default URL for BestBuy could not be found."

print("URL not provided, default URL for BestBuy is: " + url)

current_price = self.price_entity.get_price_from_page(url)

Determine price changes and prepare the result

result = ""

if current_price:

if previous_price is None:

result = f"Starting price monitoring. Current price: {current_price}"

elif current_price > previous_price:

result = f"Price went up! Current price: {current_price} (Previous: {previous_price})"

elif current_price < previous_price:

result = f"Price went down! Current price: {current_price} (Previous: {previous_price})"

else:

result = f"Price remains the same: {current_price}"

previous_price = current_price

else:

result = "Failed to retrieve the price."

```
# Add the result to the results list
```

```
self.results.append(result)
```

```
# Create a DTO (Data Transfer Object) for export
```

```
data_dto = {
```

```
    "command": "monitor_price",
```

```
    "url": url,
```

```
    "result": result,
```

```
    "entered_date": datetime.now().strftime('%Y-%m-%d'),
```

```
    "entered_time": datetime.now().strftime('%H:%M:%S')
```

```
}
```

```
# Pass the DTO to PriceEntity to handle export
```

```
self.price_entity.export_data(data_dto)
```

```
await asyncio.sleep(frequency)
```

```
except Exception as e:
```

```
    self.results.append(f"Failed to monitor price: {str(e)}")
```

```
def stop_monitoring(self):
```

```
    """Stop monitoring the price."""
```

```
    try:
```

```
        self.is_monitoring = False
```

```
        result = self.results
```

```
    except Exception as e:
```

```
result = f"Failed to stop monitoring: {str(e)}"
```

```
return result
```

```
--- StopControl.py ---
```

```
import discord
```

```
class StopControl:
```

```
    async def receive_command(self, command_data, ctx):
```

```
        """Handle the stop bot command."""
```

```
        print("Data received from boundary:", command_data)
```

```
        if command_data == "stop_bot":
```

```
            # Get the bot from the context (ctx) dynamically
```

```
            bot = ctx.bot # This extracts the bot instance from the context
```

```
            await ctx.send("The bot is shutting down...")
```

```
            print("Bot is shutting down...")
```

```
            await bot.close() # Close the bot
```

```
            result = "Bot has been shut down."
```

```
            print(result)
```

```
            return result
```

```
        else:
```

```
            result = "Invalid command."
```

```
            return result
```

```
--- __init__.py ---
```

#empty init file

--- AccountDAO.py ---

import psycopg2

from utils.Config import Config

class AccountDAO:

def __init__(self):

self.dbname = "postgres"

self.user = "postgres"

self.host = "localhost"

self.port = "5432"

self.password = Config.DATABASE_PASSWORD

def connect(self):

"""Establish a database connection."""

try:

self.connection = psycopg2.connect(

dbname=self.dbname,

user=self.user,

password=self.password,

host=self.host,

port=self.port

)

self.cursor = self.connection.cursor()

print("Database Connection Established.")

except Exception as error:

```
print(f"Error connecting to the database: {error}")
```

```
self.connection = None
```

```
self.cursor = None
```

```
def add_account(self, username: str, password: str, website: str):
```

```
    """Add a new account to the database using structured data."""
```

```
    try:
```

```
        # Combine DTO logic here by directly using the parameters
```

```
        query = "INSERT INTO accounts (username, password, website) VALUES (%s, %s, %s)"
```

```
        values = (username, password, website)
```

```
        self.cursor.execute(query, values)
```

```
        self.connection.commit()
```

```
        print(f"Account {username} added successfully.")
```

```
        return True
```

```
    except Exception as error:
```

```
        print(f"Error inserting account: {error}")
```

```
        return False
```

```
def fetch_account_by_website(self, website):
```

```
    """Fetch account credentials for a specific website."""
```

```
    try:
```

```
        query = "SELECT username, password FROM accounts WHERE LOWER(website) =  
LOWER(%s)"
```

```
        self.cursor.execute(query, (website,))
```

```
        result = self.cursor.fetchone()
```

```
        print(result)
```

```
        return result
```

except Exception as error:

print(f"Error fetching account for website {website}: {error}")

return None

def fetch_all_accounts(self):

"""Fetch all accounts from the database."""

try:

query = "SELECT id, username, password, website FROM accounts"

self.cursor.execute(query)

result = self.cursor.fetchall()

print(result)

return result

except Exception as error:

print(f"Error fetching accounts: {error}")

return []

def delete_account(self, account_id):

"""Delete an account by its ID."""

try:

self.cursor.execute("DELETE FROM accounts WHERE id = %s", (account_id,))

self.connection.commit()

if self.cursor.rowcount > 0: # Check if any rows were affected

print(f"Account with ID {account_id} deleted successfully.")

return True

else:

print(f"No account found with ID {account_id}.")

return False

except Exception as error:

print(f"Error deleting account: {error}")

return False

def reset_id_sequence(self):

"""Reset the ID sequence to the maximum ID."""

try:

reset_query = "SELECT setval('accounts_id_seq', (SELECT MAX(id) FROM accounts))"

self.cursor.execute(reset_query)

self.connection.commit()

print("ID sequence reset successfully.")

except Exception as error:

print(f"Error resetting ID sequence: {error}")

def close(self):

"""Close the database connection."""

if self.cursor:

self.cursor.close()

if self.connection:

self.connection.close()

print("Database connection closed.")

--- AvailabilityEntity.py ---

import asyncio

from utils.exportUtils import ExportUtils

from entity.BrowserEntity import BrowserEntity


```

from utils.css_selectors import Selectors

from selenium.webdriver.common.by import By

from selenium.webdriver.support.ui import WebDriverWait

from selenium.webdriver.support import expected_conditions as EC


class AvailabilityEntity:

    def __init__(self):

        self.browser_entity = BrowserEntity()


    async def check_availability(self, url: str, date_str=None, timeout=5):

        # Use BrowserEntity to navigate to the URL

        self.browser_entity.navigate_to_website(url)


        # Get selectors for the given URL

        selectors = Selectors.get_selectors_for_url(url)

        if not selectors:

            return "No valid selectors found for this URL."

        # Perform date and time selection (optional)

        if date_str:

            try:

                date_field = self.browser_entity.driver.find_element(By.CSS_SELECTOR,
selectors['date_field'])

                date_field.click()

                await asyncio.sleep(1)

                date_button = self.browser_entity.driver.find_element(By.CSS_SELECTOR,
f"{selectors['select_date']} button[aria-label*='{date_str}']")

```

```
date_button.click()
```

```
except Exception as e:
```

```
    return f"Failed to select the date: {str(e)}"
```

```
await asyncio.sleep(2) # Wait for updates (adjust this time based on page response)
```

```
# Initialize flags for select_time and no_availability elements
```

```
select_time_seen = False
```

```
no_availability_seen = False
```

```
try:
```

```
    # Check if 'select_time' is available within the given timeout
```

```
    WebDriverWait(self.browser_entity.driver, timeout).until(
```

```
        EC.presence_of_element_located((By.CSS_SELECTOR, selectors['select_time']))
```

```
    )
```

```
    select_time_seen = True # If found, set the flag to True
```

```
except:
```

```
    select_time_seen = False # If not found within timeout
```

```
try:
```

```
    # Check if 'no_availability' is available within the given timeout
```

```
    WebDriverWait(self.browser_entity.driver, timeout).until(
```

```
        lambda driver: len(driver.find_elements(By.CSS_SELECTOR,
```

```
selectors['show_next_available_button'])) > 0
```

```
    )
```

```
    no_availability_seen = True # If found, set the flag to True
```

```
except:
```

```
    no_availability_seen = False # If not found within timeout
```

```

# Logic to determine availability

if select_time_seen:

    return f"Selected or default date {date_str if date_str else 'current date'} is available for
booking."

elif no_availability_seen:

    return "No availability for the selected date."

else:

    return "Unable to determine availability. Please try again."


def export_data(self, dto):

    """Export price data to both Excel and HTML using ExportUtils.

    dto: This is a Data Transfer Object (DTO) that contains the command, URL, result, date, and
time.

    """

    # Extract the data from the DTO

    command = dto.get('command')

    url = dto.get('url')

    result = dto.get('result')

    entered_date = dto.get('entered_date') # Optional, could be None

    entered_time = dto.get('entered_time') # Optional, could be None


    # Call the Excel export method from ExportUtils

    excelResult = ExportUtils.log_to_excel(

        command=command,

```

```
url=url,

result=result,

entered_date=entered_date, # Pass the optional entered_date

entered_time=entered_time # Pass the optional entered_time

)

print(excelResult)
```

```
# Call the HTML export method from ExportUtils
```

```
htmlResult = ExportUtils.export_to_html(

    command=command,

    url=url,

    result=result,

    entered_date=entered_date, # Pass the optional entered_date

    entered_time=entered_time # Pass the optional entered_time

)

print(htmlResult)
```

```
--- BrowserEntity.py ---
```

```
import asyncio

from selenium.webdriver.common.by import By

from selenium.webdriver.support.ui import WebDriverWait

from selenium.webdriver.support import expected_conditions as EC

from selenium import webdriver

from selenium.webdriver.chrome.service import Service

from utils.css_selectors import Selectors
```

```
class BrowserEntity:
```

```
    _instance = None
```

```
    def __new__(cls, *args, **kwargs):
```

```
        if not cls._instance:
```

```
            cls._instance = super(BrowserEntity, cls).__new__(cls, *args, **kwargs)
```

```
        return cls._instance
```

```
    def __init__(self):
```

```
        self.driver = None
```

```
        self.browser_open = False
```

```
    def set_browser_open(self, is_open: bool):
```

```
        self.browser_open = is_open
```

```
    def is_browser_open(self) -> bool:
```

```
        return self.browser_open
```

```
    def launch_browser(self):
```

```
        if not self.browser_open:
```

```
            options = webdriver.ChromeOptions()
```

```
            options.add_argument("--remote-debugging-port=9222")
```

```
            options.add_experimental_option("excludeSwitches", ["enable-automation"])
```

```
            options.add_experimental_option('useAutomationExtension', False)
```

```
options.add_argument("--start-maximized")
options.add_argument("--disable-notifications")
options.add_argument("--disable-popup-blocking")
options.add_argument("--disable-infobars")
options.add_argument("--disable-extensions")
options.add_argument("--disable-webgl")
options.add_argument("--disable-webrtc")
options.add_argument("--disable-rtc-smoothing")
```

```
self.driver = webdriver.Chrome(service=Service(), options=options)
```

```
self.browser_open = True
```

```
result = "Browser launched."
```

```
print(result)
```

```
return result
```

```
else:
```

```
result = "Browser is already running."
```

```
print(result)
```

```
return result
```

```
def close_browser(self):
```

```
    if self.browser_open and self.driver:
```

```
        self.driver.quit()
```

```
        self.browser_open = False
```

```
        result = "Browser closed."
```

```
        print(result)
```

```
        return result
```

else:

result = "No browser is currently open."

print(result)

return result

def navigate_to_website(self, url):

Ensure the browser is launched before navigating

if not self.is_browser_open():

self.launch_browser()

Navigate to the URL if browser is open

if self.driver:

self.driver.get(url)

result = f"Navigated to {url}"

print(result)

return result

else:

result = "Failed to open browser."

print(result)

return result

async def perform_login(self, url, username, password):

Navigate to the website

self.navigate_to_website(url)

await asyncio.sleep(3)

```

# Enter the username

        email_field    =    self.driver.find_element(By.CSS_SELECTOR,
Selectors.get_selectors_for_url(url)['email_field'])

        email_field.send_keys(username)

        await asyncio.sleep(3)


# Enter the password

        password_field  =    self.driver.find_element(By.CSS_SELECTOR,
Selectors.get_selectors_for_url(url)['password_field'])

        password_field.send_keys(password)

        await asyncio.sleep(3)


# Click the login button

        sign_in_button  =    self.driver.find_element(By.CSS_SELECTOR,
Selectors.get_selectors_for_url(url)['SignIn_button'])

        sign_in_button.click()

        await asyncio.sleep(5)


# Wait for the homepage to load

try:

                                                                    WebDriverWait(self.driver,
30).until(EC.presence_of_element_located((By.CSS_SELECTOR,
Selectors.get_selectors_for_url(url)['homePage'])))

        result = f"Logged in to {url} successfully with username: {username}"

        print(result)

```



```
        return result

    except Exception as e:

        result = f"Failed to log in: {str(e)}"

        print(result)

    return result
```

--- PriceEntity.py ---

```
from selenium.webdriver.common.by import By

from entity.BrowserEntity import BrowserEntity

from utils.exportUtils import ExportUtils # Import ExportUtils for handling data export

from utils.css_selectors import Selectors # Import selectors to get CSS selectors for the browser
```

```
class PriceEntity:
```

```
    """PriceEntity is responsible for interacting with the system (browser) to fetch prices
    and handle the exporting of data to Excel and HTML."""
```

```
    def __init__(self):
```

```
        self.browser_entity = BrowserEntity()
```

```
    def get_price_from_page(self, url: str):
```

```
        # Navigate to the URL using BrowserEntity
```

```
        self.browser_entity.navigate_to_website(url)
```

```
        selectors = Selectors.get_selectors_for_url(url)
```

```
        try:
```

```
            # Find the price element on the page using the selector
```

```

        price_element = self.browser_entity.driver.find_element(By.CSS_SELECTOR,
selectors['price'])

        result = price_element.text

        print(f"Price found: {result}")

        return result

except Exception as e:

    return f"Error fetching price: {str(e)}"

```

```

def export_data(self, dto):

    """Export price data to both Excel and HTML using ExportUtils.

    dto: This is a Data Transfer Object (DTO) that contains the command, URL, result, date, and
time.

```

```

    """

```

```

    # Extract the data from the DTO

```

```

    command = dto.get('command')

```

```

    url = dto.get('url')

```

```

    result = dto.get('result')

```

```

    entered_date = dto.get('entered_date') # Optional, could be None

```

```

    entered_time = dto.get('entered_time') # Optional, could be None

```

```

    # Call the Excel export method from ExportUtils

```

```

    excelResult = ExportUtils.log_to_excel(

```

```

        command=command,

```

```

        url=url,

```

```

        result=result,

```

```
        entered_date=entered_date, # Pass the optional entered_date
        entered_time=entered_time # Pass the optional entered_time
    )
    print(excelResult)
```

```
# Call the HTML export method from ExportUtils
```

```
htmlResult = ExportUtils.export_to_html(
    command=command,
    url=url,
    result=result,
    entered_date=entered_date, # Pass the optional entered_date
    entered_time=entered_time # Pass the optional entered_time
)
print(htmlResult)
```

```
--- __init__.py ---
```

```
#empty init file
```

```
--- projectToText.py ---
```

```
import os
```

```
from fpdf import FPDF
```

```
# Directory where the project files are located
```

```
directory = r"D:\HARRISBURG\Harrisburg Master's Fifth Term Late Summer\CISC  
699\DiscordBotProject_CISC699"
```

```
output_pdf_path = os.path.join(directory, "projectToText.pdf")
```

```
# Lists for files and folders to ignore
```

```
filesToIgnore = ['ignore_this.py', 'Tests_URLs.txt', 'UseCases.txt', 'Read.md', '*.pdf'] # Example file names to ignore
```

```
foldersToIgnore = ['ignore_folder', '.git', '__pycache__', 'PersonelTest', 'MockTesting', 'ExportedFiles'] # Folders to ignore
```

```
# Function to retrieve all text from files, ignoring specific folders and files
```

```
def extract_project_text(directory, ignore_files=None, ignore_folders=None):
```

```
    if ignore_files is None:
```

```
        ignore_files = []
```

```
    if ignore_folders is None:
```

```
        ignore_folders = []
```

```
    project_text = ""
```

```
    for root, dirs, files in os.walk(directory):
```

```
        # Ignore specific folders
```

```
        dirs[:] = [d for d in dirs if d not in ignore_folders]
```

```
        for file in files:
```

```
            # Skip ignored files
```

```
            if file in ignore_files:
```

```
                continue
```

```
            # Only considering relevant file types
```

```
            if file.endswith('.py'):
```

```
                file_path = os.path.join(root, file)
```

```
                try:
```

```
with open(file_path, 'r', encoding='utf-8') as f:
```

```
    project_text += f"--- {file} ---\n"
```

```
    project_text += f.read() + "\n\n"
```

```
except Exception as e:
```

```
    print(f"Could not read file {file_path}: {e}")
```

```
return project_text
```

```
# Function to generate a PDF with the extracted text
```

```
def create_pdf(text, output_path):
```

```
    pdf = FPDF()
```

```
    pdf.set_auto_page_break(auto=True, margin=15)
```

```
    pdf.add_page()
```

```
    pdf.set_font("Arial", size=12)
```

```
# Ensure proper encoding handling
```

```
for line in text.split("\n"):
```

```
    # Convert the text to UTF-8 and handle unsupported characters
```

```
    try:
```

```
        pdf.multi_cell(0, 10, line.encode('latin1', 'replace').decode('latin1'))
```

```
    except UnicodeEncodeError:
```

```
        # Handle any other encoding issues
```

```
        pdf.multi_cell(0, 10, line.encode('ascii', 'replace').decode('ascii'))
```

```
pdf.output(output_path)
```

```
# Function to create PDFs for specific folders
```

```

def create_folder_specific_pdfs(directory, ignore_files=None, ignore_folders=None):

    if ignore_files is None:

        ignore_files = []

    if ignore_folders is None:

        ignore_folders = []

    # Create PDFs for each folder in the project

    for folder in os.listdir(directory):

        folder_path = os.path.join(directory, folder)

        if os.path.isdir(folder_path) and folder not in ignore_folders:

            folder_text = extract_project_text(folder_path, ignore_files, ignore_folders)

            if folder_text:

                folder_pdf_path = os.path.join(folder_path, f"All_files_in_{folder}_folder_toText.pdf")

                create_pdf(folder_text, folder_pdf_path)

                print(f"PDF created for folder {folder} at: {folder_pdf_path}")

    # Extract project text and create the main project PDF

    project_text = extract_project_text(directory, filesToIgnore, foldersToIgnore)

    if project_text:

        create_pdf(project_text, output_pdf_path)

        print(f"Main PDF created with all project's text at: {output_pdf_path}")

    else:

        print("No project text found.")

    # Create PDFs for each specific folder

    create_folder_specific_pdfs(directory, filesToIgnore, foldersToIgnore)

```

```
--- project_structure.py ---
```

```
import os
```

```
def list_files_and_folders(directory, output_file):
```

```
    with open(output_file, 'w') as f:
```

```
        for root, dirs, files in os.walk(directory):
```

```
            # Ignore .git and __pycache__ folders
```

```
            dirs[:] = [d for d in dirs if d not in ['.git', '__pycache__']]
```

```
            f.write(f"Directory: {root}\n")
```

```
            for dir_name in dirs:
```

```
                f.write(f"  Folder: {dir_name}\n")
```

```
            for file_name in files:
```

```
                f.write(f"      File: {file_name}\n")
```

```
# Update the directory path to your project folder
```

```
project_directory = "D:/HARRISBURG/Harrisburg Master's Fifth Term Late Summer/CISC  
699/DiscordBotProject_CISC699"
```

```
output_file = os.path.join(project_directory, "other/project_structure.txt")
```

```
# Call the function to list files and save output to .txt
```

```
list_files_and_folders(project_directory, output_file)
```

```
print(f"File structure saved to {output_file}")
```

```
--- 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

--- Config.py ---

class Config:

DISCORD_TOKEN =

'MTI2OTM4MTE4OTA1NjMzNTk3Mw.Gihcfw.nrQ0x-JiL65P0LIQTO-rTyyXq0qC-2PSSBuXr8'

CHANNEL_ID = 1269383349278081054

DATABASE_PASSWORD = 'postgres'

--- css_selectors.py ---

class Selectors:

SELECTORS = {

"google": {

"url": "https://www.google.com/"

},

"ebay": {

"url": "https://signin.ebay.com/signin/",

"email_field": "#userid",

"continue_button": "[data-testid='signin-continue-btn']",

```

    "password_field": "#pass",

    "login_button": "#sgnBt",

    "price": ".x-price-primary span" # CSS selector for Ebay price

},

"bestbuy": {

                                                                    "priceUrl":

"https://www.bestbuy.com/site/microsoft-xbox-wireless-controller-for-xbox-series-x-xbox-series-s-xb
ox-one-windows-devices-sky-cipher-special-edition/6584960.p?skuId=6584960",

    "url": "https://www.bestbuy.com/signin/",

    "email_field": "#fld-e",

    "#continue_button": ".cia-form__controls button",

    "password_field": "#fld-p1",

    "SignIn_button": ".cia-form__controls button",

    "price": "[data-testid='customer-price'] span", # CSS selector for BestBuy price

    "homePage": ".v-p-right-xxs.line-clamp"

},

"opentable": {

    "url": "https://www.opentable.com/",

    "unavailableUrl": "https://www.opentable.com/r/bar-spero-washington/",

    "availableUrl": "https://www.opentable.com/r/the-rux-nashville",

    "date_field": "#restProfileSideBarDtpDayPicker-label",

    "time_field": "#restProfileSideBarDtpDayPicker-label",

    "select_date": "#restProfileSideBarDtpDayPicker-wrapper", # button[aria-label*="{ }"]

    "select_time": "h3[data-test='select-time-header']",

    "no_availability": "div._8ye6OVzeOuU- span",

    "find_table_button": ".find-table-button", # Example selector for the Find Table button

    "availability_result": ".availability-result", # Example selector for availability results

```

```
        "show_next_available_button": "button[data-test='multi-day-availability-button']", # Show
next available button
```

```
        "available_dates": "ul[data-test='time-slots'] > li", # Available dates and times
```

```
    }
```

```
}
```

```
@staticmethod
```

```
def get_selectors_for_url(url):
```

```
    for keyword, selectors in Selectors.SELECTORS.items():
```

```
        if keyword in url.lower():
```

```
            return selectors
```

```
    return None # Return None if no matching selectors are found
```

```
--- exportUtils.py ---
```

```
import os
```

```
import pandas as pd
```

```
from datetime import datetime
```

```
class ExportUtils:
```

```
@staticmethod
```

```
def log_to_excel(command, url, result, entered_date=None, entered_time=None):
```

```
    # Determine the file path for the Excel file
```

```
    file_name = f"{command}.xlsx"
```

```
    file_path = os.path.join("ExportedFiles", "excelFiles", file_name)
```

```
# Ensure directory exists
```

```
os.makedirs(os.path.dirname(file_path), exist_ok=True)
```

```
# Timestamp for current run
```

```
timestamp = datetime.now().strftime('%Y-%m-%d %H:%M:%S')
```

```
# If date/time not entered, use current timestamp
```

```
entered_date = entered_date or datetime.now().strftime('%Y-%m-%d')
```

```
entered_time = entered_time or datetime.now().strftime('%H:%M:%S')
```

```
# Check if the file exists and create the structure if it doesn't
```

```
if not os.path.exists(file_path):
```

```
    df = pd.DataFrame(columns=["Timestamp", "Command", "URL", "Result", "Entered Date",  
"Entered Time"])
```

```
    df.to_excel(file_path, index=False)
```

```
# Load existing data from the Excel file
```

```
df = pd.read_excel(file_path)
```

```
# Append the new row
```

```
new_row = {
```

```
    "Timestamp": timestamp,
```

```
    "Command": command,
```

```
    "URL": url,
```

```
    "Result": result,
```

```
    "Entered Date": entered_date,
```

```
    "Entered Time": entered_time
```



```
}
```

```
# Add the new row to the existing data and save it back to Excel
```

```
df = pd.concat([df, pd.DataFrame([new_row])], ignore_index=True)
```

```
df.to_excel(file_path, index=False)
```

```
return f"Data saved to Excel file at {file_path}."
```

```
@staticmethod
```

```
def export_to_html(command, url, result, entered_date=None, entered_time=None):
```

```
    """Export data to HTML format with the same structure as Excel."""
```

```
# Define file path for HTML
```

```
file_name = f"{command}.html"
```

```
file_path = os.path.join("ExportedFiles", "htmlFiles", file_name)
```

```
# Ensure directory exists
```

```
os.makedirs(os.path.dirname(file_path), exist_ok=True)
```

```
# Timestamp for current run
```

```
timestamp = datetime.now().strftime('%Y-%m-%d %H:%M:%S')
```

```
# If date/time not entered, use current timestamp
```

```
entered_date = entered_date or datetime.now().strftime('%Y-%m-%d')
```

```
entered_time = entered_time or datetime.now().strftime('%H:%M:%S')
```

```
# Data row to insert
```

```

new_row = {
    "Timestamp": timestamp,
    "Command": command,
    "URL": url,
    "Result": result,
    "Entered Date": entered_date,
    "Entered Time": entered_time
}

```

```

# Check if the HTML file exists and append rows

```

```

if os.path.exists(file_path):

```

```

    # Open the file and append rows

```

```

    with open(file_path, "r+", encoding="utf-8") as file:

```

```

        content = file.read()

```

```

        # Look for the closing </table> tag and append new rows before it

```

```

        if "</table>" in content:

```

```

            new_row_html =

```

```

f"<tr><td>{new_row['Timestamp']}</td><td>{new_row['Command']}</td><td>{new_row['URL']}</td><
td>{new_row['Result']}</td><td>{new_row['Entered Date']}</td><td>{new_row['Entered
Time']}</td></tr>\n"

```

```

        content = content.replace("</table>", new_row_html + "</table>")

```

```

        file.seek(0) # Move pointer to the start

```

```

        file.write(content)

```

```

        file.truncate() # Truncate any remaining content

```

```

        file.flush() # Flush the buffer to ensure it's written

```

```

else:

```

```

    # If the file doesn't exist, create a new one with table headers

```

```
with open(file_path, "w", encoding="utf-8") as file:
```

```
    html_content = "<html><head><title>Command Data</title></head><body>"
```

```
    html_content += f"<h1>Results for {command}</h1><table border='1'>"
```

```
                                html_content    +=
```

```
"<tr><th>Timestamp</th><th>Command</th><th>URL</th><th>Result</th><th>Entered  
Date</th><th>Entered Time</th></tr>"
```

```
                                html_content    +=
```

```
f"<tr><td>{new_row['Timestamp']}</td><td>{new_row['Command']}</td><td>{new_row['URL']}</td><  
td>{new_row['Result']}</td><td>{new_row['Entered          Date']}</td><td>{new_row['Entered  
Time']}</td></tr>\n"
```

```
    html_content += "</table></body></html>"
```

```
    file.write(html_content)
```

```
    file.flush() # Ensure content is written to disk
```

```
    return f"HTML file saved and updated at {file_path}."
```

```
--- MyBot.py ---
```

```
import discord
```

```
from discord.ext import commands
```

```
from boundary.BrowserBoundary import BrowserBoundary
```

```
from boundary.NavigationBoundary import NavigationBoundary
```

```
from boundary.HelpBoundary import HelpBoundary
```

```
from boundary.StopBoundary import StopBoundary
```

```
from boundary.LoginBoundary import LoginBoundary
```

```
from boundary.AccountBoundary import AccountBoundary
```

```
from boundary.AvailabilityBoundary import AvailabilityBoundary
```

```
from boundary.PriceBoundary import PriceBoundary
```

```
class MyBot(commands.Bot):
```

```
    async def setup_hook(self):
```

```
        await self.add_cog(BrowserBoundary())
```

```
        await self.add_cog(NavigationBoundary())
```

```
        await self.add_cog(HelpBoundary())
```

```
        await self.add_cog(StopBoundary())
```

```
        await self.add_cog(LoginBoundary())
```

```
        await self.add_cog(AccountBoundary())
```

```
        await self.add_cog(AvailabilityBoundary())
```

```
        await self.add_cog(PriceBoundary())
```

```
    async def on_ready(self):
```

```
        print(f"Logged in as {self.user}")
```

```
        channel = discord.utils.get(self.get_all_channels(), name="general") # Adjust the channel
```

```
name if needed
```

```
        if channel:
```

```
            await channel.send("Hi, I'm online! Type '!project_help' to see what I can do.")
```

```
    async def on_command_error(self, ctx, error):
```

```
        if isinstance(error, commands.CommandNotFound):
```

```
            await ctx.send("Command not recognized. Type !project_help to see the list of commands.")
```

