

Completely-Fun

Subject: Object-Oriented Programming

Doctor: Professor Diaa

Project: Music Playlist Generator && ChatBot

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Class: Song

This class holds information about a song, such as the title, artist, genre, duration, and YouTube link. It also lets users set and get these values.

Functions in Song Class:

1. **Song(string t, string a, string g, int d, string yt)** This is the constructor for the Song class. It sets the title, artist, genre, duration, and YouTube link of the song.
 2. **setTitle(string t)** Sets the song's title.
 3. **setArtist(string a)** Sets the artist of the song.
 4. **setGenre(string g)** Sets the genre of the song.
 5. **setDuration(int d)** Sets how long the song is. It checks that the duration is not negative.
 6. **setLink(string yt)** Sets the YouTube link. The link must start with "https://".
 7. **getTitle()** Returns the song's title.
 8. **getArtist()** Returns the song's artist.
 9. **getGenre()** Returns the song's genre.
 10. **getDuration()** Returns the song's duration in seconds.
 11. **getLink()** Returns the song's YouTube link.
 12. **getFormattedDuration()** Returns the song's duration in MM:SS format.
 13. **display()** Displays the song's information: title, artist, genre, duration, and YouTube link.
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Class: Playlist

This class manages a playlist of songs. It can add or remove songs, display the playlist, and save it to a file.

Functions in **Playlist** Class:

- 14. **Playlist(string n)** Constructor that creates a new playlist with the given name.
 - 15. **isEmpty()** Checks if the playlist has no songs.
 - 16. **addSong(const Song &song)** Adds a new song to the playlist. It checks that the YouTube link is valid.
 - 17. **removeSong(int i)** Removes a song by its number in the list.
 - 18. **displayAll()** Displays all songs in the playlist.
 - 19. **saveToExcel()** Saves the playlist and activity log to a CSV file.
 - 20. **logActivity(const string &action)** Logs actions such as adding or removing songs with the current time.
 - 21. **isValidYouTubeLink(const string &url)** Checks if a link contains "youtube.com" or "youtu.be".
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Class: **ResponseSystem**

This class holds keywords and gives simple responses based on what the user says.

Functions in **ResponseSystem** Class:

- 22. **ResponseSystem()** Constructor that sets up default keywords and responses.
 - 23. **getResponse(const string &keyword)** Returns a reply based on the detected keyword.
 - 24. **toLower(const string &input)** Changes all letters in a string to lowercase.
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Class: **ChatBot**

This class is a simple chatbot that talks to the user and saves the conversation.

Functions in ChatBot Class:

25. **ChatBot(const string &botName)** Constructor that creates a chatbot with a name.

26. **greet()** Prints a welcome message to the user.

27. **reply(const string &input)** Replies to the user's message and stores the conversation.

28. **saveToExcel(const string &filename)** Saves the full chat history to a CSV file.

Class: AngryBot

This class is a chatbot with an angry personality. It inherits from **ChatBot**.

Functions in AngryBot Class:

29. **AngryBot(const string &botName)** Constructor that sets the bot name.

30. **reply(const string &input)** Overrides the normal reply to give an angry-style message.

Global Functions:

These functions help the program run and support other parts of the code.

31. **displayMenu()** Shows the music playlist options like add, remove, view, save, or exit.

32. **manualFind(const string &haystack, const string &needle)** Finds where one string starts inside another. Returns the position or -1.

33. **manualSubstr(const string &str, unsigned int start, unsigned int length)** Returns a part of the string from a given start position and length.

34. **isInteger(const string &str)** Checks if the string only has numbers.

35. `runMusicPlaylistManager()` Main logic for music playlist. Lets user add/remove/view/save songs.

36. `runChatBot()` Main logic for chatting with the chatbot and saving the conversation.

37. `main()` The main starting point of the program. Lets the user choose between the chatbot or music playlist manager.