

Weather App:

Class Location:

- **Attributes:**
 - city (string)
 - state (string) (optional)
 - country (string) (optional)
 - latitude (float)
 - longitude (float)
- **Methods:**
 - `get_city()`: Returns the city name.
 - `get_state()`: Returns the state name (if applicable).
 - `get_country()`: Returns the country code.
 - `get_coordinates()`: Returns a tuple containing latitude and longitude.

Class WeatherData:

- **Attributes:**
 - timestamp (datetime)
 - temperature (float)
 - feels_like (float) (optional)
 - humidity (int) (%)
 - pressure (float) (hPa)
 - wind_speed (float) (m/s)
 - wind_direction (string) (e.g., "N", "NE")
 - weather_condition (string) (e.g., "sunny", "rainy", "cloudy")
 - icon (string) (URL to weather icon) (optional)
- **Methods:**
 - `get_timestamp()`: Returns the time the data was retrieved.
 - `get_temperature()`: Returns the current temperature.
 - `get_feels_like()`: Returns the "feels like" temperature (optional).
 - `get_humidity()`: Returns the humidity percentage.
 - `get_pressure()`: Returns the atmospheric pressure.
 - `get_wind_speed()`: Returns the wind speed.
 - `get_wind_direction()`: Returns the wind direction.
 - `get_weather_condition()`: Returns the current weather condition.
 - `get_icon()`: Returns the URL to the weather icon (optional).

Class Forecast:

- **Attributes:**
 - `date` (datetime)
 - `weather_data` (WeatherData object)
- **Methods:**
 - `get_date()`: Returns the forecast date.
 - `get_weather_data()`: Returns the associated WeatherData object.

Class WeatherService:

- **Methods:**
 - `get_current_weather(location)`: Returns current WeatherData for a given location.
 - `get_forecast(location, days)`: Returns a list of Forecast objects for the next 'days' at a given location.

Class Alert:

- **Attributes:**
 - `type` (string) (e.g., "severe weather", "flash flood")
 - `severity` (string) (e.g., "warning", "watch")
 - `description` (string)
 - `issued_at` (datetime)
- **Methods:**
 - `get_type()`: Returns the alert type.
 - `get_severity()`: Returns the alert severity.
 - `get_description()`: Returns the alert description.
 - `get_issued_at()`: Returns the time the alert was issued.

Online Movie Streaming Platform Classes:

Class User:

- **Attributes:**
 - username (string)
 - email (string)
 - password (string) (hashed and secured)
 - subscription_plan (SubscriptionPlan object) (optional)
 - watchlist (list[Movie]) (optional)
- **Methods:**
 - `get_username()`: Returns the user's username.
 - `get_email()`: Returns the user's email address.
 - `get_subscription_plan()`: Returns the user's current subscription plan (if any).
 - `get_watchlist()`: Returns a list of movies in the user's watchlist.
 - `add_to_watchlist(movie)`: Adds a movie to the user's watchlist.
 - `remove_from_watchlist(movie)`: Removes a movie from the user's watchlist.
 - (other methods for managing account details, password changes, etc.)

Class Movie:

- **Attributes:**
 - title (string)
 - release_year (int)
 - director (string) (optional)
 - cast (list[str]) (optional)
 - genres (list[str])
 - description (string) (optional)
 - runtime (int) (minutes)
 - trailer_url (string) (optional)
 - is_available (bool)
- **Methods:**
 - `get_title()`: Returns the movie title.
 - `get_release_year()`: Returns the movie release year.
 - `get_director()`: Returns the movie director (if available).
 - `get_cast()`: Returns a list of cast members (if available).
 - `get_genres()`: Returns a list of genres the movie belongs to.
 - `get_description()`: Returns the movie description (if available).
 - `get_runtime()`: Returns the movie runtime in minutes.
 - `get_trailer_url()`: Returns the URL to the movie trailer (if available).

- `is_available_to_watch()`: Checks if the movie is currently available for streaming based on user's subscription plan.

Class SubscriptionPlan:

- **Attributes:**
 - `name` (string) (e.g., "Standard", "Premium")
 - `price` (float)
 - `description` (string)
 - `included_content` (list[str]) (e.g., "HD streaming", "Early access to new releases")
- **Methods:**
 - `get_name()`: Returns the subscription plan name.
 - `get_price()`: Returns the monthly subscription price.
 - `get_description()`: Returns a description of the plan's benefits.
 - `get_included_content()`: Returns a list of features or content included in the plan.

Class Player:

- **Methods:**
 - `load_movie(movie)`: Loads the selected movie for playback.
 - `play()`: Starts playing the loaded movie.
 - `pause()`: Pauses the currently playing movie.
 - `stop()`: Stops the currently playing movie.
 - `get_current_time()`: Returns the current playback position in seconds.
 - `seek(time)`: Seeks to a specific position in the movie (in seconds).

Class RecommendationEngine:

- **Methods:**
 - `get_recommendations_for_user(user)`: Recommends movies based on the user's watch history and ratings.
 - `get_popular_movies()`: Returns a list of currently popular movies on the platform.
 - `get_new_releases()`: Returns a list of recently released movies.

