Dataset Attributes:

- **hotel**: One of the hotels is a resort hotel and the other is a city hotel.
- **is_canceled lead_time**: Value indicating if the booking was canceled (1) or not (0).
- **arrival_date_year**: Year of arrival date.
- **arrival_date_month**: Month of arrival date with 12 categories: “January” to “December”.
- **arrival_date_week_number**: Week number of the arrival date.
- **arrival_date_day_of_month**: Day of the month of the arrival date.
- **stays_in_weekend_nights**: Number of weekend nights (Saturday or Sunday) the guest stayed or booked to stay at the hotel.
- **stays_in_week_nights**: Number of week nights (Monday to Friday) the guest stayed.
- **adults**: Number of adults
- **children**: Number of Children
- **babies**: Number of Babies
- **meal**: BB – Bed & Breakfast
- **country**: Country of origin.
- **market_segment**: Market segment designation. In categories, the term “TA” means “Travel Agents” and “TO” means “Tour Operators”
- **distribution_channel**: Booking distribution channel. The term “TA” means “Travel Agents” and “TO” means “Tour Operators”
- **is_repeated_guest**: Value indicating if the booking name was from a repeated guest (1) or not (0)
- **previous_cancellations**: Number of previous bookings that were cancelled by the customer prior to the current booking
- **previous_bookings_not_canceled**: Number of previous bookings not cancelled by the customer prior to the current booking
- **reserved_room_type**: Code of room type reserved. Code is presented instead of designation for anonymity reasons.
- **assigned_room_type**: Code for the type of room assigned to the booking. Sometimes the assigned room type differs from the reserved room type due to hotel operation reasons (e.g. overbooking) or by customer request. Code is presented instead of designation for anonymity reasons
- **booking_changes**: Number of changes/amendments made to the booking.
- **deposit_type**: No Deposit – no deposit was made; Non Refund – a deposit was made in the value of the total stay cost; Refundable – a deposit was made with a value under the total cost of stay.
- **agent**: ID of the travel agency that made the booking
- **company**: ID of the company/entity that made the booking or responsible for paying the booking. ID is presented instead of designation for anonymity reasons
- **days_in_waiting_list**: Number of days the booking was in the waiting list before it was confirmed to the customer

- **customer_type**: Group – when the booking is associated to a group; Transient – when the booking is not part of a group or contract, and is not associated to other transient booking; Transient-party – when the booking is transient, but is associated to at least other transient booking
- **adr**: Average Daily Rate (Calculated by dividing the sum of all lodging transactions by the total number of staying nights)
- **required_car_parking_spaces**: Number of car parking spaces required by the customer
- **total_of_special_requests**: Number of special requests made by the customer (e.g. twin bed or high floor)
- **reservation_status**: Check-Out – customer has checked in but already departed; No-Show – customer did not check-in and did inform the hotel of the reason why
- **reservation_status_date**: Date at which the last status was set. This variable can be used in conjunction with the ReservationStatus to understand when was the booking canceled or when did the customer checked-out of the hotel
- **name**: Name of the Guest (Not Real)
- **email**: Email (Not Real)
- **phone-number**: Phone number (not real)

Business Questions:

1. Booking Trends and Customer Behavior:

- What is the trend in booking cancellations over the years and months?
- Do lead times (time between booking and arrival) vary significantly between city hotels and resort hotels?
- How does the number of special requests correlate with booking cancellations?
- Are repeated guests more likely to cancel their bookings compared to first-time guests?
- Which market segment (e.g., travel agents, direct bookings) contributes most to cancellations?
- Are there specific months or seasons with higher booking cancellations?

2. Customer Demographics and Preferences:

- Which room types are most frequently reserved and assigned to guests?
- How do meal preferences (e.g., Bed & Breakfast) vary among guests from different countries?
- What is the average length of stay (weekend and weekday nights) for city hotel guests compared to resort hotel guests?
- Do customers with children or babies have a higher likelihood of canceling bookings?
- What is the demand for car parking spaces across different customer types?

Folder Structure

```
my_dash_app/
│
├── app.py                    # Main Dash app script
├── venv/                     # Virtual environment
│
├── layouts/                  # Layouts folder
│   └── home_layout.py        # Home page layout
│
└── callbacks/                # Callbacks folder
    └── update_home.py        # Callback functions for the home page
```

How It Works

- **`app.py`**: Initializes the app, sets up the layout, and connects the callback functions.
- **`layouts/home_layout.py`**: Defines the layout structure, with interactive components like input fields and output display areas.
- **`callbacks/update_home.py`**: Implements the callback that responds to changes in the input field and updates the output dynamically.

This setup provides a clean and organized way to manage a basic interactive Dash app.

File Breakdown and Examples

app.py:

```
from dash import Dash

from layouts.home_layout import layout

from callbacks.update_home import register_callbacks

app = Dash(__name__)

# Set the layout
app.layout = layout

# Register callbacks
register_callbacks(app)

if __name__ == '__main__':
    app.run_server(debug=True)
```

layouts/home_layout.py:

```
import dash_html_components as html

import dash_core_components as dcc

layout = html.Div([
    html.H1("Interactive Dash App"),
    dcc.Input(id='input-field', type='text', placeholder='Enter
something...'),
    html.Div(id='output-div', style={'margin-top': '20px'}),
])
```

callbacks/update_home.py:

```
from dash import Input, Output

def register_callbacks(app):
    @app.callback(
        Output('output-div', 'children'),
        [Input('input-field', 'value')]
    )
    def update_output(value):
        if value:
            return f'You entered: {value}'
        return 'Please enter something!'
```