

```
1 # Travel Booking System:
2 import itertools
3
4 def find_cheapest_flight(destination="Bali", flexibility_days=3, budget=2000,
5 preferred_airlines=None, preferred_airports=None):
6     flights = [
7         {"airline": "Garuda Indonesia", "price": 800, "departure_date": "2024-07-01",
8 "return_date": "2024-07-15", "layover_duration": 2, "overall_rating": 4.5},
9         {"airline": "Singapore Airlines", "price": 850, "departure_date": "2024-07-
10 02", "return_date": "2024-07-16", "layover_duration": 3, "overall_rating": 4.7},
11         {"airline": "AirAsia", "price": 600, "departure_date": "2024-07-05",
12 "return_date": "2024-07-19", "layover_duration": 5, "overall_rating": 3.8},
13         {"airline": "Lion Air", "price": 700, "departure_date": "2024-07-08",
14 "return_date": "2024-07-22", "layover_duration": 4, "overall_rating": 4.0},
15     ]
16
17     valid_flights = []
18     for flight in flights:
19         departure_dates = [flight["departure_date"], (flight["departure_date"] +
20 timedelta(days=flexibility_days)).isoformat()]
21         return_dates = [flight["return_date"], (flight["return_date"] +
22 timedelta(days=flexibility_days)).isoformat()]
23
24         possible_dates = list(itertools.product(departure_dates, return_dates))
25         for dep_date, ret_date in possible_dates:
26             total_price = flight["price"]
27
28             if total_price <= budget:
29                 if preferred_airlines and flight["airline"] in preferred_airlines:
30                     valid_flights.append({"airline": flight["airline"], "price":
31 total_price, "departure_date": dep_date, "return_date": ret_date})
32                 elif not preferred_airlines:
33                     valid_flights.append({"airline": flight["airline"], "price":
34 total_price, "departure_date": dep_date, "return_date": ret_date})
35
36     valid_flights.sort(key=lambda x: x["price"])
37
38     top_3_flights = valid_flights[:3]
39     for i, flight in enumerate(top_3_flights, start=1):
40         print(f"Option {i}:")
41         print(f"Airline: {flight['airline']}")
42         print(f"Price: ${flight['price']}")
43         print(f"Departure Date: {flight['departure_date']}")
44         print(f"Return Date: {flight['return_date']}")
45         print("\n")
46
47 find_cheapest_flight(preferred_airlines=["Garuda Indonesia", "Singapore Airlines"])
```