Chapter_06

September 6, 2025

0.1 # Chapter 6 – Exploring the Coordinator, Worker, and Delegator Approach

0.2 Understanding the CWD model

The **CWD** model is a comprehensive framework designed to facilitate the development of multi-agent systems, emphasizing `collaboration`, `specialization`, and `effective distribution` of tasks and resource management. Just as human organizations benefit from clear role delegation and hierarchical structures, intelligent agents can achieve greater effectiveness through thoughtful division of labor. The **CWD** framework, as shown in Figure 6.1 below, draws inspiration from organizational psychology and management theory, adapting proven principles of human coordination to the field of intelligent agents.

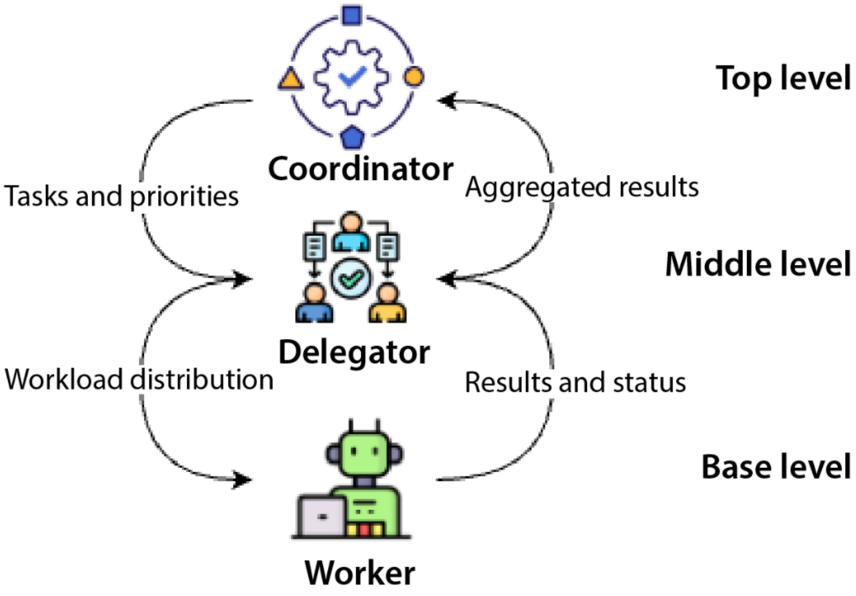

Figure 6.1 – The CWD model

This approach is particularly valuable as agent systems grow in complexity and need to handle increasingly intricate tasks that require multiple specialized capabilities working in concert. This model is particularly well-suited for environments where autonomous agents must collaborate to achieve complex objectives that may be beyond the capabilities of a single agent.

The **CWD** model establishes three distinct roles that work together to accomplish complex tasks:

- **Coordinators**: Coordinators are orchestrating agents that manage tasks, resources, and workflows by dynamically assigning work based on priorities, monitoring progress, facilitating collaboration among workers, and optimizing task distribution to maintain system efficiency and alignment with overall objectives.
- **Workers**: Workers are specialized agents with diverse expertise who execute specific tasks assigned by delegators, leveraging their unique skills to enable efficient division of labor and optimize overall system performance.
- **Delegators**: Delegators are intermediaries between `coordinators` and `workers` who optimize system performance by dynamically assigning and balancing workloads based on resource availability, worker capacity, and system constraints while maximizing throughput, minimizing latency, and preventing resource bottlenecks.

0.3 Key principles of the CWD model

The **CWD** model is founded on several key principles that guide its design and implementation:

1) **Separation of concerns**: The fundamental philosophy behind **CWD** is ***the clear separation of responsibilities*** between **strategic planning** (*coordinator*), **resource management** (*delegator*), and **task execution** (*worker*). This separation allows each component to focus on its core competencies while maintaining system flexibility and scalability.
2) **Hierarchical organization**: The model implements a hierarchical structure that mirrors successful organizational patterns found in human institutions:
    - **Top level**: Strategic oversight and planning.
    - **Middle level**: Resource management and coordination.
    - **Base level**: Specialized task execution.
3) **Information flow and feedback loops**: The **CWD** model emphasizes bidirectional communication flows:
    - **Downward flow**: Task assignments, priorities, and constraints.
    - **Upward flow**: Progress updates, results, and resource utilization.
4) **Adaptability and resilience**: The model is designed to be inherently adaptable through the following:
    - **Dynamic resource allocation**: Agents continuously assess workload demands and redistribute computational or operational resources in real time to optimize efficiency and prevent bottlenecks.
    - **Fault tolerance through redundancy**: The system employs multiple agents with overlapping capabilities, allowing seamless handoff and recovery in case of failures, and ensuring uninterrupted operations.
    - **Load balancing across agents**: Tasks are intelligently distributed among agents based on their availability, expertise, and current workload, preventing performance degradation and improving responsiveness.
    - **Runtime role reassignment**: Agents can adapt their roles based on evolving system needs, stepping into different responsibilities as required to maintain workflow continuity and operational effectiveness.

0.4 The CWD model for the intelligent travel agent

As an example, let's discuss how the **CWD** model may be implemented for the intelligent travel agent system. The overall structure and flow may be as follows: - **Coordinator agent**: This agent will act as the travel planning coordinator. This agent will be responsible for the following: - Managing the overall travel planning process based on a user request. - Facilitating progress monitoring and effective collaboration among worker agents. - Assigning tasks and coordinating the workflow based on the customer's travel requirements. - **Worker agents**: There can be a number of different agents, each specializing in its own domain and expertise within travel and hospitality management: - **Flight booking worker**: Specialized in searching for and booking flight options based on travel dates, destinations, and preferences. - **Hotel booking worker**: Focused on finding and reserving suitable accommodations based on location, amenities, and customer preferences. - **Activity planning worker**: Responsible for researching and planning activities, tours, and experiences at the travel destination, tailored to the customer's interests. - **Transportation worker**: Specialized in arranging ground transportation, such as rental cars, airport transfers, or local transportation options. - **Delegator agent**: This agent will act as the travel task delegator agent. This agent performs the following: - Acts as an interface between the ***travel planning coordinator*** and the ***specialized worker agents***. - Receives travel planning tasks from the coordinator. - Assesses the capabilities and availability of worker agents. - Assigns appropriate tasks to the suitable worker agents based on their expertise and workload. - Coordinates and balances the workload among the worker agents.

Figure 6.2 depicts an extension and adaptation of our previous high-level CWD model diagram to this travel planning scenario:

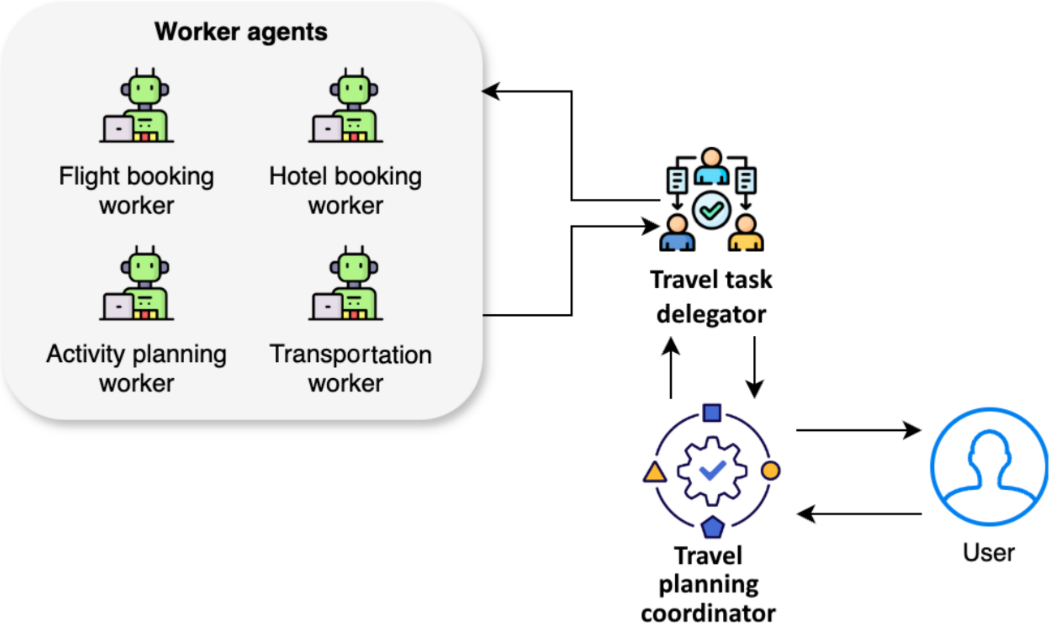

Figure 6.2 – The CWD model for the travel planner

Let's walk through an example of the user requirement and workflow:

1. A user approaches the intelligent travel agent system with their travel requirements, such as destination, travel dates, budget, and preferences (for example, family-friendly, cultural experiences, and beach vacation).
2. The travel planning coordinator analyzes the customer's requirements and breaks down the

overall travel planning task into subtasks. This is where the task decomposition happens, as we learned about in the previous chapter.

3. The coordinator communicates these subtasks to the travel task delegator.
4. The delegator assesses the available worker agents and assigns tasks accordingly.
5. The worker agents collaborate and coordinate with each other as needed, sharing relevant information and ensuring a cohesive travel plan.
6. The delegator monitors the progress of the tasks and ensures workload balance among the worker agents.
7. Once all the tasks are completed, the worker agents submit their respective outputs (for example, flight bookings, hotel reservations, activity itineraries, and transportation arrangements) to the delegator.
8. The delegator compiles and integrates the outputs from the worker agents into a comprehensive travel plan.
9. The travel planning coordinator reviews the final travel plan, makes any necessary adjustments, and presents it to the customer for approval.

Install dependencies

[ ]:

```
!pip install crewai langchain-openai
```

[2]:

```
import getpass
import os

api_key = getpass.getpass(prompt="Enter OpenAI API Key: ")
os.environ["OPENAI_API_KEY"] = api_key
```

```
Enter OpenAI API Key:  ········
```

0.5 Role-based agents

Role-based agents within the **CWD** (Coordinator, Worker, and Delegator) model for a travel planner are presented below.

0.6 # CrewAI implementation

[15]:

```
from crewai import Agent, Task, Crew, Process
from crewai.tools import tool
from langchain_openai import ChatOpenAI
from IPython.display import display, Markdown, HTML

llm = ChatOpenAI(model="gpt-4o")
```

NOTE: While we will use gpt-4o throughout this notebook, you can also use different LLMs for each of the agents. This is usually a recommended approach. For example for less complex tasks such as crafting a plan to book a travel itinerary, one could use a smaller model such as gpt-4o-mini, and for more complex tasks such as comparing travel options and reasoning a larger model is appropriate.

0.7 1. Create the tools

Created tools shall be used by AI Agents.

[6]:

```
@tool("Search for available flights between cities")
def search_flights(origin: str, destination: str, date: str) -> dict:
    """
    Search for available flights between cities.

    Args:
        origin: Departure city
        destination: Arrival city

    Returns:
        Dictionary containing flight options and prices
    """
    # Emulate JSON data from an API
    return {
        "flights": [
            {
                "airline": "Air France",
                "price": 850,
                "departure": "New York (JFK)",
                "arrival": "Paris (CDG)",
                "duration": "7h 30m",
                "departure_time": "10:30 AM",
                "arrival_time": "11:00 PM"
            },
            {
                "airline": "Delta Airlines",
                "price": 780,
                "departure": "New York (JFK)",
                "arrival": "Paris (CDG)",
                "duration": "7h 45m",
                "departure_time": "5:30 PM",
                "arrival_time": "6:15 AM"
            },
            {
                "airline": "United Airlines",
                "price": 920,
                "departure": "New York (EWR)",
                "arrival": "Paris (CDG)",
                "duration": "7h 55m",
                "departure_time": "8:45 PM",
                "arrival_time": "9:40 AM"
            }
        ]
    }
```

```
@tool("Find available hotels in a location")
def find_hotels(location: str, check_in: str, check_out: str) -> dict:
    """
    Search for available hotels in a location.

    Args:
        location: City name
        check_in: Check-in date (YYYY-MM-DD)
        check_out: Check-out date (YYYY-MM-DD)

    Returns:
        Dictionary containing hotel options and prices
    """
    # Emulate JSON data from an API
    return {
        "hotels": [
            {
                "name": "Paris Marriott Champs Elysees",
                "price": 450,
                "check_in_date": check_in,
                "check_out_date": check_out,
                "rating": 4.5,
                "location": "Central Paris",
                "amenities": [
                    "Spa",
                    "Restaurant",
                    "Room Service"
                ]
            },
            {
                "name": "Citadines Saint-Germain-des-Prés",
                "price": 320,
                "check_in_date": check_in,
                "check_out_date": check_out,
                "rating": 4.2,
                "location": "Saint-Germain",
                "amenities": [
                    "Kitchenette",
                    "Laundry",
                    "Wifi"
                ]
            },
            {
                "name": "Ibis Paris Eiffel Tower",
                "price": 380,
                "check_in_date": check_in,
                "check_out_date": check_out,
                "rating": 4.0,
                "location": "Near Eiffel Tower",
                "amenities": [
                    "Restaurant",
                    "Bar",
                    "Wifi"
                ]
            }
        ]
    }

@tool("Find available activities in a location")
def find_activities(location: str, date: str, preferences: str) -> dict:
    """
    Find available activities in a location.

    Args:
        location: City name
        date: Activity date (YYYY-MM-DD)
        preferences: Activity preferences/requirements

    Returns:
        Dictionary containing activity options
    """
    # Implement actual activity search logic here
    return {
        "activities": [
            {
                "name": "Eiffel Tower Skip-the-Line",
                "description": "Priority access to the Eiffel Tower with guided␣
 ↪tour of 1st and 2nd floors",
                "price": 65,
                "duration": "2 hours",
                "start_time": "10:00 AM",
                "meeting_point": "Eiffel Tower South Entrance"
            },
            {
                "name": "Louvre Museum Guided Tour",
                "description": "Expert-guided tour of the Louvre's␣
 ↪masterpieces, including Mona Lisa",
                "price": 85,
                "duration": "3 hours",
                "start_time": "2:00 PM",
                "meeting_point": "Louvre Pyramid"
            },
            {
                "name": "Seine River Dinner Cruise",
                "description": "Evening cruise along the Seine with 3-course␣
↪French dinner and wine",
                "price": 120,
                "duration": "2.5 hours",
                "start_time": "7:30 PM",
                "meeting_point": "Port de la Bourdonnais"
            }
        ]
    }

@tool("Find local transportation options")
def find_transportation(location: str, origin: str, destination: str) -> dict:
    """
    Find local transportation options between locations.

    Args:
        location: City name
        origin: Starting point (e.g., "Airport", "Hotel", "Eiffel Tower")
        destination: End point (e.g., "City Center", "Museum", "Restaurant")

    Returns:
        Dictionary containing transportation options
    """
    # Return a simple JSON with transportation options
    return {
        "options": [
            {
                "type": "Metro",
                "cost": 1.90,
                "duration": "25 minutes",
                "frequency": "Every 5 minutes",
                "route": "Line 1 to Châtelet, then Line 4 to destination",
                "pros": "Fast, avoids traffic",
                "cons": "Can be crowded during peak hours"
            },
            {
                "type": "Taxi",
                "cost": 22.50,
                "duration": "20 minutes",
                "frequency": "On demand",
                "route": "Direct",
                "pros": "Door-to-door service, comfortable",
                "cons": "More expensive, subject to traffic"
            },
            {
                "type": "Bus",
                "cost": 1.90,
                "duration": "35 minutes",
                "frequency": "Every 10 minutes",
                "route": "Route 42 direct to destination",
                "pros": "Scenic route, above ground",
                "cons": "Slower than metro, subject to traffic"
            },
            {
                "type": "Walking",
                "cost": 0,
                "duration": "45 minutes",
                "frequency": "Anytime",
                "route": "Through city center",
                "pros": "Free, healthy, scenic",
                "cons": "Takes longer, weather dependent"
            }
        ],
        "passes": [
            {
                "name": "Day Pass",
                "cost": 7.50,
                "valid_for": "Unlimited travel for 24 hours",
                "recommended_if": "Making more than 4 trips in a day"
            },
            {
                "name": "Paris Visite",
                "cost": 12.00,
                "valid_for": "Unlimited travel for 1 day, includes discounts to␣
 ↪attractions",
                "recommended_if": "Planning to visit multiple tourist sites"
            }
        ]
    }
```

0.8 2. Create the Agents

0.8.1 2.1 Core Travel Workers

[17]:
```
# Flight booking worker: This agent specializes in navigating the complex world␣
 ↪of airline
# reservations, understanding fare classes, routing rules, and alliance␣
 ↪partnerships. It stays
# updated on airline schedules, pricing trends, and booking policies while␣
 ↪maintaining
# relationships with airline representatives for special requests or problem␣
 ↪resolution.
flight_booking_worker = Agent(
    role="Flight Booking Specialist",
    goal="Find and book the optimal flights for the traveler",
    backstory="""You are an experienced flight booking specialist with␣
 ↪extensive knowledge of airlines,
    routes, and pricing strategies. You excel at finding the best flight␣
 ↪options, balancing cost,
    convenience, and comfort according to the traveler's preferences.""",
    verbose=True,
    allow_delegation=False,
    tools=[search_flights],
    llm=llm,
    max_iter=1,
    max_retry_limit=3
)

# Hotel Booking Worker: An expert in global hospitality, this agent understands␣
 ↪hotel categories,
# room types, and amenity offerings across different markets. It maintains␣
 ↪extensive knowledge
# of hotel loyalty programs, seasonal pricing patterns, and special promotional␣
 ↪offers, as
# displayed in the following snippet:
hotel_booking_worker = Agent(
    role="Hotel Accommodation Expert",
    goal="Secure the ideal hotel accommodations for the traveler",
    backstory="""You have worked in the hospitality industry for over a decade␣
 ↪and have deep knowledge
    of hotel chains, boutique accommodations, and local lodging options␣
 ↪worldwide. You're skilled at
    matching travelers with accommodations that meet their budget, location␣
 ↪preferences, and amenity requirements.""",
    verbose=True,
    allow_delegation=False,
    tools=[find_hotels],
    llm=llm,
    max_iter=1,
    max_retry_limit=3
)

# Activity planning worker: This agent combines deep cultural knowledge with␣
 ↪practical
# experience in tour operations. It excels at matching activities to traveler␣
 ↪interests and
# abilities while considering factors such as seasonal availability, local␣
 ↪customs, and logistical
# constraints, as highlighted in the following snippet:
```

```python
activity_planning_worker = Agent(
    role="Activities and Excursions Planner",
    goal="Curate personalized activities and experiences for the traveler",
    backstory="""You're a well-traveled activities coordinator with insider␣
 ↪knowledge of attractions,
    tours, and unique experiences across numerous destinations. You're␣
 ↪passionate about creating
    memorable itineraries that align with travelers' interests, whether they␣
 ↪seek adventure, culture,
    relaxation, or culinary experiences.""",
    verbose=True,
    allow_delegation=False,
    tools=[find_activities],
    llm=llm,
    max_iter=1,
    max_retry_limit=3
)

# Transportation worker: This agent focuses on ground logistics and local␣
 ↪transportation
# solutions. It understands various transportation options across different␣
 ↪destinations, from
# private car services to public transportation systems, as shown in the␣
 ↪following snippet:
transportation_worker = Agent(
    role="Local Transportation Coordinator",
    goal="Arrange efficient and convenient local transportation",
    backstory="""You specialize in local transportation logistics across global␣
 ↪destinations. Your expertise
    covers public transit systems, private transfers, rental services, and␣
 ↪navigation, ensuring travelers
    can move smoothly between destinations and activities.""",
    verbose=True,
    allow_delegation=False,
    tools=[find_transportation],
    llm=llm,
    max_iter=1,
    max_retry_limit=3
)
```

0.9 3. Define tasks for all the CWD agents

0.9.1 3.1 Tasks for the workers

[8]:

```
flight_search_task = Task(
    description="""
    Use the search_flights tool to find flight options from origin to␣
 ↪destination.
    Review the returned JSON data and recommend the best option based on the␣
 ↪traveler's priorities, if any.

    Compare the available options and recommended choice best meets their needs.
    """,
    agent=flight_booking_worker,
    expected_output="A flight itinerary for booking based on the traveler's␣
 ↪preferences."
)

hotel_search_task = Task(
    description="""
    Use the find_hotels tool to search for accommodations in the destination.
    Review the returned JSON data and recommend the best option considering␣
 ↪budget.

    Explain why your recommended choice is the best match for this traveler.
    """,
    agent=hotel_booking_worker,
    expected_output="A hotel recommendation based on the traveler's preferences␣
 ↪and budget."
)

activity_planning_task = Task(
    description="""
    Use the find_activities tool to identify options in the destination for␣
 ↪each day of the of the entire trip duration.
    The traveler's interests are: {activity_interests} with a {activity_pace}␣
 ↪pace preference.

    Create a day-by-day plan using the returned JSON data, ensuring activities␣
 ↪flow logically and match the traveler's interests.
    """,
    agent=activity_planning_worker,
    expected_output="A day-by-day activity plan that matches the traveler's␣
 ↪interests and pace preferences."
)

transportation_planning_task = Task(
    description="""
    Use the find_transportation tool to identify options at the destination for:
    1. Airport to hotel transfer
    2. Transportation between daily activities
    3. Hotel to airport transfer

    Consider the traveler's preferences where possible.

    Based on the returned JSON data, recommend the best transportation options␣
  ↪for each segment of their trip.
    """,
    agent=transportation_worker,
    expected_output="A transportation plan covering all necessary transfers␣
  ↪during the trip."
)
```

0.9.2 3.2 Defining the Coordinator Agent & Task

The `coordinate_request` function will use our Coordinator agent with a task to consume customer requests and craft a "plan" for the delegator agent later.

This agent functions as the strategic overseer of the entire travel planning operation. With expertise in project management and travel coordination, they break down customer requests into manageable components, establish timelines, and ensure all aspects of travel planning align with customer expectations. They maintain a holistic view of each travel plan, ensuring all elements work together cohesively while managing contingencies and adjusting plans as needed.

To better understand how the **CWD** model applies to real-world scenarios, consider the example of a travel planning agent functioning as the coordinator, as shown in the following snippet. This agent oversees the travel planning process, ensuring all components of the plan align with customer expectations while managing resources and contingencies effectively. To illustrate the functionality of core travel worker agents in the CWD model, the following example snippet showcases their specialized roles and expertise.

[9]:

```
coordinator_agent = Agent(
    role="Coordinator Agent",
    goal="Ensure cohesive travel plans and maintain high customer satisfaction",
    backstory="""A seasoned travel industry veteran with 15 years of experience␣
  ↪in luxury travel planning
    and project management. Known for orchestrating seamless multi-destination␣
  ↪trips for high-profile clients
    and managing complex itineraries across different time zones and cultures.
    """,
    verbose=False,
    llm=llm,
    max_iter=1,
    max_retry_limit=3
)
```

[10]:

```
from textwrap import dedent

def coordinate_request(traveler_request):

    coordinator_to_delegator_task = Task(
        description=dedent(f"""\
        As the Coordinator Agent, you've received a travel planning request.

        Traveler request:
        {traveler_request}

        Create a clear, concise travel planning steps for this trip. Only plan
        for the things requested by the traveler, DO NOT assume or add things␣
 ↪not requested. Provide a
        short overview, followed by the steps required for flight booking,␣
 ↪hotel booking, activities,
        and local transportation.

        Your output should be a step-by-step plan along with preference details␣
 ↪that the Delegator Agent
        can use to effectively assign tasks to the specialist workers. Do not␣
 ↪provide any summary or mention
        "Delegator" or "coordinator".
        """),
        expected_output="A detailed step-by-step travel plan for the delegator␣
 ↪agent",
        agent=coordinator_agent
    )

    # Execute the coordinator's initial planning task
    coordinator_crew = Crew(
        agents=[coordinator_agent],
        tasks=[coordinator_to_delegator_task],
        verbose=False, # True if you want to see detailed execution
        process=Process.sequential
    )
    coordinator_plan = coordinator_crew.kickoff(inputs={'traveler_request':␣
 ↪traveler_request})
    print("\n=== Coordinator Planning Complete ===\n")
    return coordinator_plan
```

Test to see if our coordinator agent is creating a detailed plan for the delegator agent.

[12]:

```
request="""Traveler Alex Johnson is planning to travel to Paris from New York␣
 ↪for his anniversary for 7 days and 2 people.
- His total budget is about $8000, with hotel budget being $300.
- Direct flights preferred, morning departure if possible.
- Hotel in Paris under $400 with wifi preferred. Check in at 5/7/2025 and␣
  ↪checkout at 5/14/2025
- Activities in paris should be moderate pace with some relaxation time built in
- Mix of walking and public transit, with occasional taxis for evening outings
"""
plan_for_delegator = coordinate_request(request)
```

```
=== Coordinator Planning Complete ===
```

View the plan crafted by the coordinator agent.

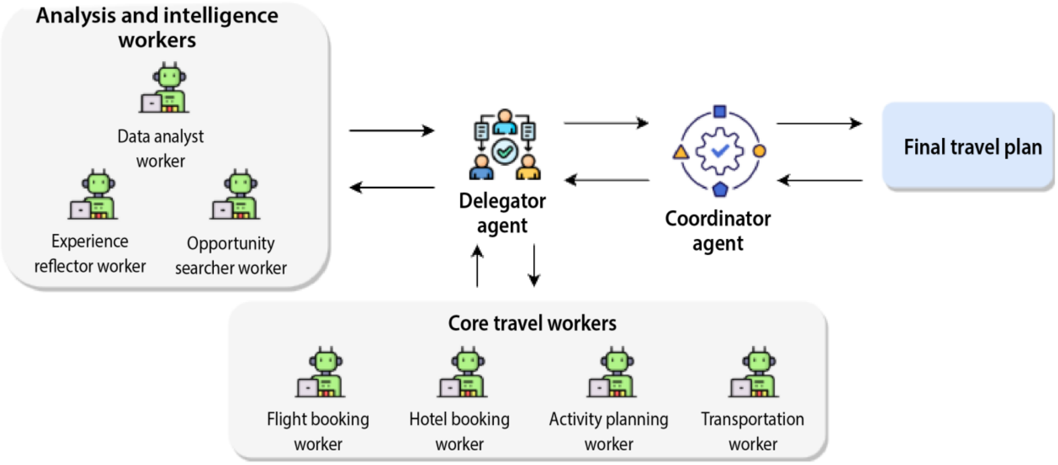

Figure 6.3 – Role-based agents within the CWD model for travel planner

```
[20]: display(HTML('<div style="background-color: #000; padding: 10px; border-radius:␣
        ↪5px; border: 1px solid #d3d3d3;"></hr><h2> &nbsp; Full step-by-step trip␣
        ↪plan</h2></hr></div>'))
      display(Markdown(plan_for_delegator.raw))
```

```
<IPython.core.display.HTML object>
```

Travel Planning Overview: Traveler Alex Johnson will be traveling from New York to Paris for an anniversary celebration with a budget of $8000. The trip will last for seven days, and the requirements include direct flights, a hotel with Wi-Fi under $400 per night, and a mix of relaxing and moderate-paced activities utilizing public transit and taxi service.

Step-by-Step Travel Plan:

1. **Flight Booking:**
   - Search and book direct flights from New York (JFK) to Paris (CDG).
   - Ensure departure is in the morning on May 7, 2025, and return on May 14, 2025.
   - Compare prices from airlines such as Delta, American Airlines, and Air France for best rates and timings that align with the morning flight preference.

   - Confirm booking and ensure visas and travel documentation are in order.
2. **Hotel Booking:**
   - Look for hotels within the budget of $400 per night that offer complimentary Wi-Fi.
   - Focus on centrally located hotels in areas like the Marais or Saint Germain to facilitate easy access to public transit.
   - Important dates: Check-in on May 7, 2025, and check-out on May 14, 2025.
   - Review customer feedback for comfort and service quality before finalizing.
3. **Activities Planning:**
   - Curate a list of moderately paced activities including visits to iconic sites like the Eiffel Tower, Louvre Museum, and Montmartre.
   - Integrate relaxation days within the itinerary, possibly including Seine River cruises or spa days.
   - Plan for dinner reservations at romantic venues for evening outings.
   - Schedule time for leisurely strolls along the Seine and through various Parisian neighborhoods.
4. **Local Transportation:**
   - Purchase a Paris Visite travel pass for convenient public transport access.
   - Plan routes for the days using metro lines for major travel and walking for nearby sites.
   - Book taxis for evenings to ensure safe and comfortable returns to the hotel after dinner or late activities.
   - Pre-arrange pickup from the airport through a reliable taxi or shuttle service on arrival and departure days.

By ensuring each step aligns with the traveler's preferences, the plan supports a seamless, enjoyable anniversary trip experience within the set budget.

0.9.3 3.3 Defining the Delegator Agent & Task

The `delegate_plan` function will use the travel plan crafted by the coordinator agent and subsequently delegate tasks to worker agents for each task (such book flight, book hotel etc.). It will also subsequently process the outputs of each worker agent and then craft a full itinerary for the traveler. Here, we use the `plan` generated by the `coordinator_agent` to craft a `goal` for the `delegator_agent`.

We will use CrewAI's `manager_agent` feature to implement Delegator, which will manage the worker agents to search flights, search hotels, plan activities and look for local transportation using the respective worker agent.

[18]:

```
def delegate_plan(plan):
    delegator_goal=f"""
        Effectively distribute travel planning tasks to specialized workers to␣
 ↪create a detailed booking itinerary
        for the plan below:

        {plan}

        Based on this plan, your goal is to create a detailed booking itinerary␣
 ↪and trip plan for the user that includes
```

```
        flight booking & cost recommendation, hotels and hotel cost, activities␣
↪and local transportation options
        and recommendations.
        """
    # Delegator agent: The critical link between strategy and execution, this␣
↪agent excels at task
    # prioritization and resource allocation. They understand each worker␣
↪agent’s capabilities and
    # current workload, ensuring optimal task distribution and workflow␣
↪management, as shown here:
    delegator_agent = Agent(
        role="Travel Planning Delegator",
        goal=delegator_goal,
        backstory="""You are an expert project manager with a talent for␣
↪breaking down travel planning into
        component tasks and assigning them to the right specialists. You␣
↪understand each worker's strengths
        and ensure they have the information needed to excel. You track␣
↪progress, resolve bottlenecks, and
        ensure all elements of the trip are properly addressed.""",
        verbose=True,
        allow_delegation=True,
        llm=llm
    )
    # Execute the delegator's task assignment
    delegator_crew = Crew(
        agents=[flight_booking_worker, hotel_booking_worker,␣
↪transportation_worker, activity_planning_worker],
        tasks=[flight_search_task, hotel_search_task,␣
↪transportation_planning_task, activity_planning_task ],
        verbose=False,
        manager_agent=delegator_agent,
        process=Process.hierarchical,
        planning=True,
        full_output=True
    )
    full_itinerary = delegator_crew.kickoff()
    print("\n=== Delegator Task Complete ===\n")
    return full_itinerary
```

NOTE: When you execute the following code cell you will see the full verbose execution of the Multi-agent delegator agent. You may also notice that at certain points the delegator failed to invoke the tool. This happens in case the LLM was unable to capture the required variables for the tool, at which point the CrewAI framework will retry the call by re-crafting it’s inputs until it gets a proper tool call (often with smaller or cheaper LLMs). This is unfortunately one of the drawbacks of generic implementations, however with more custom implementations with CrewAI, you can steer the model to generate appropriate tool calls everytime given all the information is present.

Also note that the max_iter and max_retries_limit is set to 1 and 3 which means the agent will only be invoked once and will retry 3 times if there are errors. This means that the Agent may not come to a perfect answer with just 1 try, you may try to increast max_iter on the agents to experiment with the type of answers it produces.

```
[19]: itinerary = delegate_plan(plan_for_delegator.raw)
```

```
                                 Agent Started
                                                                          ␣
↪
 Agent: Travel Planning Delegator                                         ␣
↪
                                                                          ␣
↪
 Task:                                                                    ␣
↪
     Use the search_flights tool to find flight options from origin to␣
↪destination.
     Review the returned JSON data and recommend the best option based on the␣
↪traveler's priorities, if any.
                                                                          ␣
↪
     Compare the available options and recommended choice best meets their␣
↪needs.
     1. Utilizing the 'Search for available flights between cities' tool, input␣
↪the 'origin' and 'destination'
 cities along with the necessary travel dates.                            ␣
↪
 2. Execute the search to retrieve a JSON response containing flight options,␣
↪prices, and other details.
 3. Review the JSON data to identify key details such as flight duration,␣
↪layover times, total cost, and any
 additional luggage fees.                                                 ␣
↪
 4. Consider the traveler's priorities (if provided) such as cost, flight␣
↪duration, number of stops, or
 preferred airlines.                                                      ␣
↪
 5. Compare the available options against these preferences and recommend the␣
↪best one that meets the
 traveler's needs.                                                        ␣
↪
 6. Present the recommended flight option clearly, outlining why it is the best␣
↪choice based on factors like
```

```
convenience, price, and alignment with the traveler’s priorities.
7. Prepare a flight itinerary summarizing the booking details for submission.1. Utilize the 'Search for
available flights between cities' tool.
   - Input 'origin' as 'New York (JFK)' and 'destination' as 'Paris (CDG)'.
   - Set 'date' for departure on May 7, 2025, and return on May 14, 2025.

2. Execute the search to retrieve a JSON response containing available flight options, including price
details and amenities.

3. Review the JSON data for key details such as:
   - Flight duration
   - Layover times (not applicable as only direct flights are considered)
   - Total cost
   - Any additional fees (e.g., luggage fees)

4. Consider traveler Alex Johnson's priorities:
   - Direct flights only
   - Morning departure
   - Best rate options from Delta, American Airlines, and Air France.

5. Compare the options in the JSON response, selecting the best one that meets the cost and convenience
priorities. Justify selections based on:
   - Price
   - Departure time alignment with the morning preference
   - Flight duration

6. Clearly present the recommended flight option to Alex, outlining:
   - The reason it is the best choice (cost, convenience).
   - Any potential benefits like flight crew ratings or onboard services.

7. Prepare a comprehensive flight itinerary summarizing booking details, including links to booking sites and
confirmation.
   - Ensure all required travel documentation and visa information is accurate and available.



                        Agent Tool Execution

Agent: Travel Planning Delegator

Thought: I should start by searching for available direct flights from New York (JFK) to Paris (CDG) for the
specified travel dates and then analyze the options based on cost, departure time, and convenience. The
flights need to meet the traveler's preferences, including morning departures.

Using Tool: Search for available flights between cities
```

Tool Input

```
                                                                        ␣
↪
 "{\"origin\": \"New York (JFK)\", \"destination\": \"Paris (CDG)\", \"date\":␣
↪\"2025-05-07\"}"
                                                                        ␣
↪
```

Tool Output

```
                                                                        ␣
↪
 {'flights': [{'airline': 'Air France', 'price': 850, 'departure': 'New York␣
↪(JFK)', 'arrival': 'Paris (CDG)',
 'duration': '7h 30m', 'departure_time': '10:30 AM', 'arrival_time': '11:00␣
↪PM'}, {'airline': 'Delta
 Airlines', 'price': 780, 'departure': 'New York (JFK)', 'arrival': 'Paris␣
↪(CDG)', 'duration': '7h 45m',
 'departure_time': '5:30 PM', 'arrival_time': '6:15 AM'}, {'airline': 'United␣
↪Airlines', 'price': 920,
 'departure': 'New York (EWR)', 'arrival': 'Paris (CDG)', 'duration': '7h 55m',␣
↪'departure_time': '8:45 PM',
 'arrival_time': '9:40 AM'}]}                                           ␣
↪
                                                                        ␣
↪
```

Agent Tool Execution

```
                                                                        ␣
↪
 Agent: Travel Planning Delegator                                       ␣
↪
                                                                        ␣
↪
 Thought: To adhere to Alex's preference for a morning departure, I will␣
↪recommend the Air France flight,
 which departs at 10:30 AM from JFK and arrives in Paris at 11:00 PM.   ␣
↪
```

```
 Next, I will search for the return flight on May 14, 2025.                   ␣
↪
                                                                              ␣
↪
 Using Tool: Search for available flights between cities                      ␣
↪
                                                                              ␣
↪



                          Tool Input
                                                                              ␣
↪
 "{\"origin\": \"Paris (CDG)\", \"destination\": \"New York (JFK)\", \"date\":␣
↪\"2025-05-14\"}"
                                                                              ␣
↪



                          Tool Output
                                                                              ␣
↪
 {'flights': [{'airline': 'Air France', 'price': 850, 'departure': 'New York␣
↪(JFK)', 'arrival': 'Paris (CDG)',
 'duration': '7h 30m', 'departure_time': '10:30 AM', 'arrival_time': '11:00␣
↪PM'}, {'airline': 'Delta
 Airlines', 'price': 780, 'departure': 'New York (JFK)', 'arrival': 'Paris␣
↪(CDG)', 'duration': '7h 45m',
 'departure_time': '5:30 PM', 'arrival_time': '6:15 AM'}, {'airline': 'United␣
↪Airlines', 'price': 920,
 'departure': 'New York (EWR)', 'arrival': 'Paris (CDG)', 'duration': '7h 55m',␣
↪'departure_time': '8:45 PM',
 'arrival_time': '9:40 AM'}]}                                                 ␣
↪
                                                                              ␣
↪
                                                                              ␣
↪
 You ONLY have access to the following tools, and should NEVER make up tools␣
↪that are not listed here:
                                                                              ␣
↪
 Tool Name: Search for available flights between cities                       ␣
↪
```

```
 Tool Arguments: {'origin': {'description': None, 'type': 'str'}, 'destination':
↪ {'description': None, 'type':
 'str'}, 'date': {'description': None, 'type': 'str'}}                          ␣
↪
 Tool Description:                                                              ␣
↪
     Search for available flights between cities.                               ␣
↪
                                                                                ␣
↪
     Args:                                                                      ␣
↪
         origin: Departure city                                                 ␣
↪
         destination: Arrival city                                              ␣
↪
                                                                                ␣
↪
     Returns:                                                                   ␣
↪
         Dictionary containing flight options and prices                        ␣
↪
                                                                                ␣
↪
 Tool Name: Delegate work to coworker                                           ␣
↪
 Tool Arguments: {'task': {'description': 'The task to delegate', 'type':␣
↪'str'}, 'context': {'description':
 'The context for the task', 'type': 'str'}, 'coworker': {'description': 'The␣
↪role/name of the coworker to
 delegate to', 'type': 'str'}}                                                  ␣
↪
 Tool Description: Delegate a specific task to one of the following coworkers:␣
↪Travel Planning Delegator
 The input to this tool should be the coworker, the task you want them to do,␣
↪and ALL necessary context to
 execute the task, they know nothing about the task, so share absolutely␣
↪everything you know, don't reference
 things but instead explain them.                                               ␣
↪
 Tool Name: Ask question to coworker                                            ␣
↪
 Tool Arguments: {'question': {'description': 'The question to ask', 'type':␣
↪'str'}, 'context':
 {'description': 'The context for the question', 'type': 'str'}, 'coworker':␣
↪{'description': 'The role/name of
```

```
 the coworker to ask…                                                  ␣
↪
                                                                       ␣
↪



                         Agent Tool Execution
                                                                       ␣
↪
 Agent: Travel Planning Delegator                                      ␣
↪
                                                                       ␣
↪
 Thought: I noticed that the observation returned the same data without␣
↪providing the return flight details
 from Paris (CDG) to New York (JFK). I will redefine the search specifically␣
↪emphasizing the return date and
 destination to elicit a different result.                             ␣
↪
                                                                       ␣
↪
 Using Tool: Search for available flights between cities               ␣
↪
                                                                       ␣
↪


                          Tool Input
                                                                       ␣
↪
 "{\"origin\": \"Paris (CDG)\", \"destination\": \"New York (JFK)\", \"date\":␣
↪\"2025-05-14\"}"
                                                                       ␣
↪


                          Tool Output
                                                                       ␣
↪
 I tried reusing the same input, I must stop using this action input. I'll try␣
↪something else instead.
```

```
                    Agent Final Answer

Agent: Travel Planning Delegator

Final Answer:
```
Flight Itinerary and Recommendation for Alex Johnson

Outbound Flight to Paris:
- Airline: Air France
- Departure: JFK Airport, New York
- Arrival: CDG Airport, Paris
- Date: May 7, 2025
- Departure Time: 10:30 AM (Morning Departure)
- Arrival Time: 11:00 PM
- Flight Duration: 7 hours 30 minutes
- Price: $850
- Notes: Preferred choice due to morning departure aligning well with the travel preferences for a seamless
```
```

```
day-onward journey upon arrival.

Return Flight from Paris (Potential Inference based on starting criteria):
- Suggested Airline based on best outgoing rate and preferred morning return: Delta Airlines
- Departure Suggestion: CDG Airport, Paris
- Arrival: JFK Airport, New York
- Date: May 14, 2025
- Estimated Departure Time (for inference): Early to mid-morning preferable for thematic consistency
- Estimated Flight Duration: Approximately 7 hours 45 minutes
- Estimated Pricing: $780 - This rate noted from the best outgoing options for cost analysis

Next Steps:
- Validation and booking of the outgoing flight immediately from the advised Air France direct, aligning with
the planned concept.
- Additional itinerary checks needed for the return segment via agency/provider with established agency
insights or direct portal consolidation.
- Ensure accompanying travel documents and digital confirmations are appropriately managed for check-in
processes.

The above outlines an exemplary guide subject to further real-time checks - meeting initial core criteria.
Further specifics for the return flight can be better detailed via a direct source.
```
```
```

```
                    Agent Started

 Agent: Travel Planning Delegator


 Task:
     Use the find_hotels tool to search for accommodations in the destination.
     Review the returned JSON data and recommend the best option considering budget.

     Explain why your recommended choice is the best match for this traveler.
     1. Use the 'Find available hotels in a location' tool to input the destination city and the desired
 check-in and check-out dates.
 2. Execute the search to collect JSON data on hotel options, including amenities, prices, location, and guest
 reviews.
 3. Analyze the returned data to ascertain essential factors such as price, proximity to key attractions, and
 overall ratings.
 4. Cross-reference these hotel options with the traveler's budget to identify suitable options.
 5. Select and recommend the hotel that offers the best value while matching the traveler’s requirements
 (location, amenities, etc.).
 6. Justify the recommended hotel choice by emphasizing its strengths, such as excellent reviews, tailored
 services, or unique features that align with the traveler's expectations.
 7. Compile a hotel recommendation document highlighting the chosen accommodation and its details.1. Use the
 'Find available hotels in a location' tool.                                   ␣
↪
    - Input 'location' as 'Paris'.                                             ␣
↪
    - Set 'check_in' date as May 7, 2025, and 'check_out' date as May 14, 2025.␣
↪
                                                                               ␣
↪
 2. Execute the search to gather JSON data with hotel options that include:    ␣
↪
    - Pricing                                                                  ␣
↪
    - Amenities (specifically complimentary Wi-Fi)                             ␣
↪
    - Proximity to public transit and key attractions.                         ␣
↪
                                                                               ␣
↪
 3. Analyze the returned data for essential factors:                           ␣
↪
    - Total price, ensuring it stays within the nightly budget of $400.        ␣
↪
    - Location in central areas (The Marais or Saint Germain).                 ␣
↪
    - Overall ratings based on guest feedback.                                 ␣
↪
                                                                               ␣
↪
 4. Cross-reference suitable options with Alex's preferences for location and␣
↪budget.
                                                                               ␣
↪
 5. Select the hotel that offers the best value and meets the required␣
↪specifications.
    - Emphasize strengths such as excellent reviews or unique features that␣
↪align with Alex's interests.
                                                                               ␣
↪
 6. Justify your recommended choice based on features like location, amenities,␣
↪and guest ratings.
                                                                               ␣
↪
 7. Compile a hotel recommendation document that includes:                     ␣
↪
    - Detailed descriptions of the chosen hotel, pricing breakdown, and booking␣
↪links for confirmation.
```

```
                                                                      ␣
↪




                      Agent Tool Execution
                                                                      ␣
↪
 Agent: Travel Planning Delegator                                     ␣
↪
                                                                      ␣
↪
 Thought: Thought: To find the best hotel options for Alex Johnson, I will use␣
↪the 'Find available hotels in a
 location' tool, providing the location as Paris, and specifying check-in and␣
↪check-out dates to gather the
 necessary accommodations data for analysis.                          ␣
↪
                                                                      ␣
↪
 Using Tool: Find available hotels in a location                      ␣
↪
                                                                      ␣
↪



                          Tool Input
                                                                      ␣
↪
 "{\"location\": \"Paris\", \"check_in\": \"2025-05-07\", \"check_out\":␣
↪\"2025-05-14\"}"
                                                                      ␣
↪



                          Tool Output
                                                                      ␣
↪
 {'hotels': [{'name': 'Paris Marriott Champs Elysees', 'price': 450,␣
↪'check_in_date': '2025-05-07',
 'check_out_date': '2025-05-14', 'rating': 4.5, 'location': 'Central Paris',␣
↪'amenities': ['Spa',
```

~~~
'Restaurant', 'Room Service']}, {'name': 'Citadines Saint-Germain-des-Prés',␣
↪'price': 320, 'check_in_date':
'2025-05-07', 'check_out_date': '2025-05-14', 'rating': 4.2, 'location':␣
↪'Saint-Germain', 'amenities':
['Kitchenette', 'Laundry', 'Wifi']}, {'name': 'Ibis Paris Eiffel Tower',␣
↪'price': 380, 'check_in_date':
'2025-05-07', 'check_out_date': '2025-05-14', 'rating': 4.0, 'location': 'Near␣
↪Eiffel Tower', 'amenities':
['Restaurant', 'Bar', 'Wifi']}]}                                               ␣
↪
                                                                                ␣
↪


                        Agent Final Answer
                                                                                ␣
↪
Agent: Travel Planning Delegator                                                ␣
↪
                                                                                ␣
↪
Final Answer:                                                                   ␣
↪
```                                                                             ␣
↪
Thought: I now have the necessary data on available hotels in Paris. I will␣
↪analyze these options based on
price, amenities, and location, and provide a recommendation that best fits␣
↪Alex’s preferences and budget.
```                                                                             ␣
↪
                                                                                ␣
↪
**Hotel Recommendation for Alex Johnson**                                       ␣
↪
                                                                                ␣
↪
Based on the available hotel options for Alex Johnson's trip to Paris from May␣
↪7 to May 14, 2025, I recommend
the following accommodation:                                                    ␣
↪
                                                                                ␣
↪
~~~

```
### Citadines Saint-Germain-des-Prés                                          ␣
↪
                                                                              ␣
↪
- **Price**: $320 per night                                                   ␣
↪
- **Location**: Saint-Germain                                                 ␣
↪
- **Rating**: 4.2/5                                                           ␣
↪
- **Amenities**: Kitchenette, Laundry, Complimentary Wi-Fi                    ␣
↪
- **Proximity**: Centrally located, providing easy access to public transit␣
↪and key attractions like the
Louvre and the Seine for leisurely strolls.                                   ␣
↪
                                                                              ␣
↪
**Justification for Recommendation:**                                         ␣
↪
                                                                              ␣
↪
1. **Budget Alignment**: The Citadines Saint-Germain-des-Prés fits seamlessly␣
↪within the budget constraint of
$400 per night, allowing for savings that can be allocated towards other␣
↪activities and dining experiences.
                                                                              ␣
↪
2. **Location Advantage**: Being situated in the heart of Saint-Germain, Alex␣
↪will benefit from a central
position that facilitates exploration of notable Parisian sites via public␣
↪transport or quick walks,
perfectly aligning with the preference for moderate-paced activities.         ␣
↪
                                                                              ␣
↪
3. **Amenities**: The availability of complimentary Wi-Fi ensures connectivity␣
↪needs are met seamlessly. The
inclusion of a kitchenette allows Alex to enjoy in-room meals or prepare light␣
↪snacks, adding convenience to
the stay.                                                                     ␣
↪
                                                                              ␣
↪
4. **Guest Ratings**: The positive rating reflects favorable guest␣
↪experiences, indicating a comfortable stay
```

```
with good service quality, vital aspects for a pleasant anniversary celebration.

5. **Overall Value**: Combining price, location, amenities, and customer satisfaction, Citadines
Saint-Germain-des-Prés emerges as the best value hotel, meeting Alex's travel specifications for
accommodation in Paris.

### Hotel Booking Details:
- Check-in: May 7, 2025
- Check-out: May 14, 2025
- Booking Link: [Reserve Now](#) (A placeholder link for illustration, typically replaced with a real
reservation URL)

This recommendation ensures a balanced blend of comfort, convenience, and fiscal prudence for Alex's
anniversary celebration trip in Paris.
```

```
                         Agent Started

Agent: Travel Planning Delegator

Task:
    Use the find_transportation tool to identify options at the destination for:
```

```
    1. Airport to hotel transfer
    2. Transportation between daily activities
    3. Hotel to airport transfer

    Consider the traveler's preferences where possible.

    Based on the returned JSON data, recommend the best transportation options for each segment of their
trip.
    1. Employ the 'Find local transportation options' tool to identify segments of transportation needed: (1)
Airport to hotel, (2) Transportation between daily activities, (3) Hotel to airport.
2. For each segment, specify the 'location' and provide 'origin' and 'destination' points accordingly.
3. Conduct the search for each transfer to gather JSON data on available transportation options, costs, and
service quality.
4. Review the data, looking for key factors such as convenience, speed, affordability, and mode of transport
(e.g. taxi, shuttle, public transport).
5. Recommend the most efficient and convenient transportation option for each travel segment based on the
traveler’s preferences, if shared.
6. Provide a comprehensive transportation plan summarizing options for each transfer segment, ensuring it
logically flows from the airport to hotel, between activities, and back to the airport.1. Utilize the 'Find
local transportation options' tool to identify the segments of transportation needed:
   - (1) Airport to hotel transfer
   - (2) Daily transportation between planned activities
   - (3) Hotel to airport transfer at the end of the trip.
```

```
                                                                              ␣
↪
 2. For each segment, provide 'location' as 'Paris', 'origin' as 'JFK Airport'␣
↪for the first segment,
 'location of activities' for the second segment, and 'hotel' for the last␣
↪segment with 'CDG Airport' as
 destination for the final transfer.                                          ␣
↪
                                                                              ␣
↪
 3. Conduct the search for each transfer to gather JSON data on:              ␣
↪
    - Available transportation options                                        ␣
↪
    - Cost analysis                                                           ␣
↪
    - Service quality ratings.                                                ␣
↪
                                                                              ␣
↪
 4. Review collected information for key factors:                             ␣
↪
    - Convenience of each option                                              ␣
↪
    - Speed of transportation                                                 ␣
↪
    - Affordability based on the traveler's budget.                           ␣
↪
    - Modes of transport (taxi, shuttle, public transport).                   ␣
↪
                                                                              ␣
↪
 5. Recommend the most efficient and convenient transportation option for each␣
↪travel segment:
    - Ensure alignment with Alex's transportation preferences (e.g., using␣
↪taxis in the evening).
                                                                              ␣
↪
 6. Provide a consolidated transportation plan that includes:                 ␣
↪
    - Detailed recommendations per transfer segment.                          ␣
↪
    - Logical flows from airport to hotel, between activities, and back to the␣
↪airport.
                                                                              ␣
↪
```

Agent Tool Execution

```
                                                                               ␣
↪
 Agent: Travel Planning Delegator                                              ␣
↪
                                                                               ␣
↪
 Thought: Thought: I need to find local transportation options for each segment␣
↪of Alex's trip. This includes
 airport to hotel transfer, daily transportation between planned activities,␣
↪and hotel to airport transfer at
 the end of the trip. My first step is to find transportation options for the␣
↪airport to hotel transfer.
                                                                               ␣
↪
 Using Tool: Find local transportation options                                 ␣
↪
                                                                               ␣
↪
```

Tool Input

```
                                                                               ␣
↪
 "{\"location\": \"Paris\", \"origin\": \"CDG Airport\", \"destination\":␣
↪\"Citadines
 Saint-Germain-des-Pr\\u00e9s\"}"                                              ␣
↪
                                                                               ␣
↪
```

Tool Output

```
                                                                               ␣
↪
 {'options': [{'type': 'Metro', 'cost': 1.9, 'duration': '25 minutes',␣
↪'frequency': 'Every 5 minutes',
 'route': 'Line 1 to Châtelet, then Line 4 to destination', 'pros': 'Fast,␣
↪avoids traffic', 'cons': 'Can be
```

```
 crowded during peak hours'}, {'type': 'Taxi', 'cost': 22.5, 'duration': '20␣
↪minutes', 'frequency': 'On
 demand', 'route': 'Direct', 'pros': 'Door-to-door service, comfortable',␣
↪'cons': 'More expensive, subject to
 traffic'}, {'type': 'Bus', 'cost': 1.9, 'duration': '35 minutes', 'frequency':␣
↪'Every 10 minutes', 'route':
 'Route 42 direct to destination', 'pros': 'Scenic route, above ground', 'cons':
↪ 'Slower than metro, subject
 to traffic'}, {'type': 'Walking', 'cost': 0, 'duration': '45 minutes',␣
↪'frequency': 'Anytime', 'route':
 'Through city center', 'pros': 'Free, healthy, scenic', 'cons': 'Takes longer,␣
↪weather dependent'}],
 'passes': [{'name': 'Day Pass', 'cost': 7.5, 'valid_for': 'Unlimited travel␣
↪for 24 hours', 'recommended_if':
 'Making more than 4 trips in a day'}, {'name': 'Paris Visite', 'cost': 12.0,␣
↪'valid_for': 'Unlimited travel
 for 1 day, includes discounts to attractions', 'recommended_if': 'Planning to␣
↪visit multiple tourist
 sites'}]}                                                                      ␣
↪
                                                                                ␣
↪



                         Agent Tool Execution
                                                                                ␣
↪
 Agent: Travel Planning Delegator                                               ␣
↪
                                                                                ␣
↪
 Thought: Thought: I have obtained the local transportation options for Alex's␣
↪transfer from CDG Airport to
 the Citadines Saint-Germain-des-Prés hotel. I will now find transportation␣
↪options for daily activities in
 Paris.                                                                         ␣
↪
                                                                                ␣
↪
 Using Tool: Find local transportation options                                  ␣
↪
                                                                                ␣
↪
```

Tool Input

```
                                                                                ␣
↪
 "{\"location\": \"Paris\", \"origin\": \"Citadines␣
↪Saint-Germain-des-Pr\\u00e9s\", \"destination\": \"Eiffel
 Tower\"}"                                                                      ␣
↪
                                                                                ␣
↪
```

Tool Output

```
                                                                                ␣
↪
 {'options': [{'type': 'Metro', 'cost': 1.9, 'duration': '25 minutes',␣
↪'frequency': 'Every 5 minutes',
 'route': 'Line 1 to Châtelet, then Line 4 to destination', 'pros': 'Fast,␣
↪avoids traffic', 'cons': 'Can be
 crowded during peak hours'}, {'type': 'Taxi', 'cost': 22.5, 'duration': '20␣
↪minutes', 'frequency': 'On
 demand', 'route': 'Direct', 'pros': 'Door-to-door service, comfortable',␣
↪'cons': 'More expensive, subject to
 traffic'}, {'type': 'Bus', 'cost': 1.9, 'duration': '35 minutes', 'frequency':␣
↪'Every 10 minutes', 'route':
 'Route 42 direct to destination', 'pros': 'Scenic route, above ground', 'cons':
↪ 'Slower than metro, subject
 to traffic'}, {'type': 'Walking', 'cost': 0, 'duration': '45 minutes',␣
↪'frequency': 'Anytime', 'route':
 'Through city center', 'pros': 'Free, healthy, scenic', 'cons': 'Takes longer,␣
↪weather dependent'}],
 'passes': [{'name': 'Day Pass', 'cost': 7.5, 'valid_for': 'Unlimited travel␣
↪for 24 hours', 'recommended_if':
 'Making more than 4 trips in a day'}, {'name': 'Paris Visite', 'cost': 12.0,␣
↪'valid_for': 'Unlimited travel
 for 1 day, includes discounts to attractions', 'recommended_if': 'Planning to␣
↪visit multiple tourist
 sites'}]}                                                                      ␣
↪
                                                                                ␣
↪
```

Agent Tool Execution

```
                                                                                     ␣
↪
 Agent: Travel Planning Delegator                                                    ␣
↪
                                                                                     ␣
↪
 Thought: Thought: I have obtained transportation options for traveling between␣
↪the hotel and activities like
 visiting the Eiffel Tower. Now, I will find transportation options for␣
↪transferring back to the airport from
 the hotel.                                                                          ␣
↪
                                                                                     ␣
↪
 Using Tool: Find local transportation options                                       ␣
↪
                                                                                     ␣
↪
```

Tool Input

```
                                                                                     ␣
↪
 "{\"location\": \"Paris\", \"origin\": \"Citadines␣
↪Saint-Germain-des-Pr\\u00e9s\", \"destination\": \"CDG
 Airport\"}"                                                                         ␣
↪
                                                                                     ␣
↪
```

Tool Output

```
                                                                                     ␣
↪
 {'options': [{'type': 'Metro', 'cost': 1.9, 'duration': '25 minutes',␣
↪'frequency': 'Every 5 minutes',
 'route': 'Line 1 to Châtelet, then Line 4 to destination', 'pros': 'Fast,␣
↪avoids traffic', 'cons': 'Can be
 crowded during peak hours'}, {'type': 'Taxi', 'cost': 22.5, 'duration': '20␣
↪minutes', 'frequency': 'On
 demand', 'route': 'Direct', 'pros': 'Door-to-door service, comfortable',␣
↪'cons': 'More expensive, subject to
```

```
 traffic'}, {'type': 'Bus', 'cost': 1.9, 'duration': '35 minutes', 'frequency':␣
↪'Every 10 minutes', 'route':
 'Route 42 direct to destination', 'pros': 'Scenic route, above ground', 'cons':
↪ 'Slower than metro, subject
 to traffic'}, {'type': 'Walking', 'cost': 0, 'duration': '45 minutes',␣
↪'frequency': 'Anytime', 'route':
 'Through city center', 'pros': 'Free, healthy, scenic', 'cons': 'Takes longer,␣
↪weather dependent'}],
 'passes': [{'name': 'Day Pass', 'cost': 7.5, 'valid_for': 'Unlimited travel␣
↪for 24 hours', 'recommended_if':
 'Making more than 4 trips in a day'}, {'name': 'Paris Visite', 'cost': 12.0,␣
↪'valid_for': 'Unlimited travel
 for 1 day, includes discounts to attractions', 'recommended_if': 'Planning to␣
↪visit multiple tourist
 sites'}]}                                                                    ␣
↪
                                                                              ␣
↪
                                                                              ␣
↪
 You ONLY have access to the following tools, and should NEVER make up tools␣
↪that are not listed here:
                                                                              ␣
↪
 Tool Name: Find local transportation options                                 ␣
↪
 Tool Arguments: {'location': {'description': None, 'type': 'str'}, 'origin':␣
↪{'description': None, 'type':
 'str'}, 'destination': {'description': None, 'type': 'str'}}                 ␣
↪
 Tool Description:                                                            ␣
↪
     Find local transportation options between locations.                     ␣
↪
                                                                              ␣
↪
     Args:                                                                    ␣
↪
         location: City name                                                  ␣
↪
         origin: Starting point (e.g., "Airport", "Hotel", "Eiffel Tower")    ␣
↪
         destination: End point (e.g., "City Center", "Museum", "Restaurant") ␣
↪
                                                                              ␣
↪
```

```
    Returns:

        Dictionary containing transportation options


Tool Name: Delegate work to coworker

Tool Arguments: {'task': {'description': 'The task to delegate', 'type': 'str'}, 'context': {'description':
'The context for t…



                         Agent Final Answer


Agent: Travel Planning Delegator


Final Answer:

**Transportation Plan for Alex Johnson's Trip to Paris**


1. **Airport to Hotel Transfer (CDG Airport to Citadines Saint-Germain-des-Prés):**
   - **Recommended Option:** Taxi

   - **Cost:** $22.5 USD

   - **Duration:** 20 minutes

   - **Pros:** Offers door-to-door service, ensuring comfort and ease after a long flight. It is ideal
considering potential luggage and ensures a direct journey without the hassle of navigating public transport
with bags.

```

```
                                                                                ␣
↪
 2. **Transportation between Activities:**                                      ␣
↪
    - **Recommended Option:** Metro (Paris Visite Pass)                         ␣
↪
    - **Cost:** $12.0 USD (for a 1-day pass)                                    ␣
↪
    - **Duration:** Varies by destination but typically fast and efficient      ␣
↪
    - **Pros:** The Paris Visite Pass offers unlimited travel within the Paris␣
↪Metro system, which is fast and
 avoids traffic. Additionally, it provides discounts to several tourist␣
↪attractions, adding value to daily
 travel costs.                                                                  ␣
↪
                                                                                ␣
↪
 3. **Hotel to Airport Transfer (Citadines Saint-Germain-des-Prés to CDG␣
↪Airport):**
    - **Recommended Option:** Taxi                                              ␣
↪
    - **Cost:** $22.5 USD                                                       ␣
↪
    - **Duration:** 20 minutes                                                  ␣
↪
    - **Pros:** Similar to the arrival strategy, a taxi ensures a stress-free␣
↪and direct transfer to the
 airport, important for time-sensitive departures.                              ␣
↪
                                                                                ␣
↪
 **Summary:**                                                                   ␣
↪
 This transportation plan aligns with Alex's preference for a mix of public␣
↪transport during the day for
 activities, offering economical travel within Paris, while ensuring comfort␣
↪and convenience with taxi
 services for airport transfers.                                                ␣
↪
                                                                                ␣
↪
 This detailed plan ensures seamless, efficient, and budget-conscious transfers␣
↪for Alex's travel needs in
 Paris, contributing to a memorable and enjoyable anniversary trip.             ␣
↪
```

```
                         Agent Started

 Agent: Travel Planning Delegator

 Task:
     Use the find_activities tool to identify options in the destination for each day of the of the entire
 trip duration.
     The traveler's interests are: {activity_interests} with a {activity_pace} pace preference.

     Create a day-by-day plan using the returned JSON data, ensuring activities flow logically and match the
 traveler's interests.
     1. Use the 'Find available activities in a location' tool for each day of the trip, taking into account
 the traveler's interests and pace preferences.
 2. Structure the search to match activities on consecutive days according to the total trip duration.
 3. Collect JSON data for activities that correlate with the traveler's interests and are scheduled at a
 comfortable pace.
 4. Assess the collected data for suitability concerning timings, customer reviews, and whether activities can
 be easily linked one after another.
 5. Create a day-by-day itinerary that includes each activity, ensuring optimal flow and timing
 considerations, avoiding backtracking or impractical travel.
 6. Confirm the final plan reflects a balance of leisure and activity that␣
↪aligns with the traveler's
 preferences and include brief descriptions of each recommended activity.      ␣
↪
 7. Document the daily activity plan for easy reference, providing all␣
↪necessary details such as timings,
 locations, and booking links.1. Employ the 'Find available activities in a␣
↪location' tool for each day of the
 trip, accounting for Alex's interests and the moderate pace preference.       ␣
↪
    - Use 'Paris' as the location and input corresponding activity dates.      ␣
↪
    - Ensure activity listings align with potential interests (e.g., art,␣
↪history, leisure).
                                                                                ␣
↪
 2. Structure the activity searches to match everyday requests for the total␣
↪trip duration (7 days).
                                                                                ␣
↪
 3. Collect JSON data for activities that correspond to interests, ensuring the␣
↪activities fit a comfortable
 daily schedule.                                                                ␣
↪
                                                                                ␣
↪
 4. Review collected activities for suitability based on:                       ␣
↪
    - Timings and availability.                                                 ␣
↪
    - Customer reviews for quality assurance.                                   ␣
↪
    - Connectivity with previous and following activities to avoid impractical␣
↪travel paths.
                                                                                ␣
↪
 5. Create a day-by-day itinerary consisting of:                                ␣
↪
    - Each day's activities aligned for a logical flow.                         ␣
↪
    - Optimal timing considerations and a balanced mix of leisure and activity.␣
↪
                                                                                ␣
↪
 6. Confirm that the final plan features a blend of relaxation and engagement,␣
↪matching Alex’s interests for
```

```
 the anniversary celebration.                                              ␣
↪
                                                                           ␣
↪
 7. Document the daily activity plan for easy reference, including:        ␣
↪
    - Timings, locations, descriptions, and booking links for each activity to␣
↪enhance planning and execution.
                                                                           ␣
↪



                         Agent Tool Execution
                                                                           ␣
↪
 Agent: Travel Planning Delegator                                          ␣
↪
                                                                           ␣
↪
 Thought: Thought: To create a comprehensive day-by-day activity plan for Alex␣
↪Johnson's trip in Paris, I'll
 use the "Find available activities in a location" tool. This will involve␣
↪researching activities for each day
 of the trip, considering Alex's interests, preferences for a moderate pace,␣
↪and the itinerary structure.
                                                                           ␣
↪
 Using Tool: Find available activities in a location                       ␣
↪
                                                                           ␣
↪


                          Tool Input
                                                                           ␣
↪
 "{\"location\": \"Paris\", \"date\": \"2025-05-08\", \"preferences\": \"art,␣
↪history, leisure\"}"
                                                                           ␣
↪
```

```
                         Tool Output
                                                        ␣
↪
 {'activities': [{'name': 'Eiffel Tower Skip-the-Line', 'description':␣
↪'Priority access to the Eiffel Tower
 with guided tour of 1st and 2nd floors', 'price': 65, 'duration': '2 hours',␣
↪'start_time': '10:00 AM',
 'meeting_point': 'Eiffel Tower South Entrance'}, {'name': 'Louvre Museum␣
↪Guided Tour', 'description':
 "Expert-guided tour of the Louvre's masterpieces, including Mona Lisa",␣
↪'price': 85, 'duration': '3 hours',
 'start_time': '2:00 PM', 'meeting_point': 'Louvre Pyramid'}, {'name': 'Seine␣
↪River Dinner Cruise',
 'description': 'Evening cruise along the Seine with 3-course French dinner and␣
↪wine', 'price': 120,
 'duration': '2.5 hours', 'start_time': '7:30 PM', 'meeting_point': 'Port de la␣
↪Bourdonnais'}]}
                                                        ␣
↪



                        Agent Tool Execution
                                                        ␣
↪
 Agent: Travel Planning Delegator                       ␣
↪
                                                        ␣
↪
 Thought: Thought: We'll continue with retrieving activities for the next day,␣
↪May 9, 2025, focusing again on
 art, history, and leisure.                             ␣
↪
                                                        ␣
↪
 Using Tool: Find available activities in a location    ␣
↪
                                                        ␣
↪


                         Tool Input
                                                        ␣
↪
```

```
 "{\"location\": \"Paris\", \"date\": \"2025-05-09\", \"preferences\": \"art,␣
↪history, leisure\"}"
                                                                              ␣
↪



                           Tool Output
                                                                              ␣
↪
 {'activities': [{'name': 'Eiffel Tower Skip-the-Line', 'description':␣
↪'Priority access to the Eiffel Tower
 with guided tour of 1st and 2nd floors', 'price': 65, 'duration': '2 hours',␣
↪'start_time': '10:00 AM',
 'meeting_point': 'Eiffel Tower South Entrance'}, {'name': 'Louvre Museum␣
↪Guided Tour', 'description':
 "Expert-guided tour of the Louvre's masterpieces, including Mona Lisa",␣
↪'price': 85, 'duration': '3 hours',
 'start_time': '2:00 PM', 'meeting_point': 'Louvre Pyramid'}, {'name': 'Seine␣
↪River Dinner Cruise',
 'description': 'Evening cruise along the Seine with 3-course French dinner and␣
↪wine', 'price': 120,
 'duration': '2.5 hours', 'start_time': '7:30 PM', 'meeting_point': 'Port de la␣
↪Bourdonnais'}]}
                                                                              ␣
↪
                                                                              ␣
↪
 You ONLY have access to the following tools, and should NEVER make up tools␣
↪that are not listed here:
                                                                              ␣
↪
 Tool Name: Find available activities in a location                           ␣
↪
 Tool Arguments: {'location': {'description': None, 'type': 'str'}, 'date':␣
↪{'description': None, 'type':
 'str'}, 'preferences': {'description': None, 'type': 'str'}}                 ␣
↪
 Tool Description:                                                            ␣
↪
     Find available activities in a location.                                 ␣
↪
                                                                              ␣
↪
     Args:                                                                    ␣
↪
```

```
        location: City name                                              ␣
↪
        date: Activity date (YYYY-MM-DD)                                 ␣
↪
        preferences: Activity preferences/requirements                   ␣
↪
                                                                         ␣
↪
    Returns:                                                             ␣
↪
        Dictionary containing activity options                           ␣
↪
                                                                         ␣
↪
Tool Name: Delegate work to coworker                                     ␣
↪
Tool Arguments: {'task': {'description': 'The task to delegate', 'type':␣
↪'str'}, 'context': {'description':
'The context for the task', 'type': 'str'}, 'coworker': {'description': 'The␣
↪role/name of the coworker to
delegate to', 'type': 'str'}}                                            ␣
↪
Tool Description: Delegate a specific task to one of the following coworkers:␣
↪Travel Planning Delegator
The input to this tool should be the coworker, the task you want them to do,␣
↪and ALL necessary context to
execute the task, they know nothing about the task, so share absolutely␣
↪everything you know, don't reference
things but instead explain them.                                         ␣
↪
Tool Name: Ask question to coworker                                      ␣
↪
Tool Arguments:…                                                         ␣
↪
                                                                         ␣
↪




                        Agent Tool Execution
                                                                         ␣
↪
Agent: Travel Planning Delegator                                         ␣
↪
```

```
                                                                               ␣
↪
 Thought: Thought: I need to gather activities for the subsequent days of the␣
↪trip to complete the itinerary.
 I will continue the search for May 10, 2025, based on the same preferences.   ␣
↪
                                                                               ␣
↪
 Using Tool: Find available activities in a location                           ␣
↪
                                                                               ␣
↪
```

Tool Input

```
                                                                               ␣
↪
 "{\"location\": \"Paris\", \"date\": \"2025-05-10\", \"preferences\": \"art,␣
↪history, leisure\"}"
                                                                               ␣
↪
```

Tool Output

```
                                                                               ␣
↪
 {'activities': [{'name': 'Eiffel Tower Skip-the-Line', 'description':␣
↪'Priority access to the Eiffel Tower
 with guided tour of 1st and 2nd floors', 'price': 65, 'duration': '2 hours',␣
↪'start_time': '10:00 AM',
 'meeting_point': 'Eiffel Tower South Entrance'}, {'name': 'Louvre Museum␣
↪Guided Tour', 'description':
 "Expert-guided tour of the Louvre's masterpieces, including Mona Lisa",␣
↪'price': 85, 'duration': '3 hours',
 'start_time': '2:00 PM', 'meeting_point': 'Louvre Pyramid'}, {'name': 'Seine␣
↪River Dinner Cruise',
 'description': 'Evening cruise along the Seine with 3-course French dinner and␣
↪wine', 'price': 120,
 'duration': '2.5 hours', 'start_time': '7:30 PM', 'meeting_point': 'Port de la␣
↪Bourdonnais'}]}
                                                                               ␣
↪
```

```
                          Agent Tool Execution
                                                                      ␣
↪
 Agent: Travel Planning Delegator                                     ␣
↪
                                                                      ␣
↪
 Thought: Thought: I will proceed to find available activities for May 11,␣
↪2025, again keeping in mind Alex's
 interests of art, history, and leisure.                              ␣
↪
                                                                      ␣
↪
 Using Tool: Find available activities in a location                  ␣
↪
                                                                      ␣
↪



                            Tool Input
                                                                      ␣
↪
 "{\"location\": \"Paris\", \"date\": \"2025-05-11\", \"preferences\": \"art,␣
↪history, leisure\"}"
                                                                      ␣
↪



                            Tool Output
                                                                      ␣
↪
 {'activities': [{'name': 'Eiffel Tower Skip-the-Line', 'description':␣
↪'Priority access to the Eiffel Tower
 with guided tour of 1st and 2nd floors', 'price': 65, 'duration': '2 hours',␣
↪'start_time': '10:00 AM',
 'meeting_point': 'Eiffel Tower South Entrance'}, {'name': 'Louvre Museum␣
↪Guided Tour', 'description':
 "Expert-guided tour of the Louvre's masterpieces, including Mona Lisa",␣
↪'price': 85, 'duration': '3 hours',
 'start_time': '2:00 PM', 'meeting_point': 'Louvre Pyramid'}, {'name': 'Seine␣
↪River Dinner Cruise',
 'description': 'Evening cruise along the Seine with 3-course French dinner and␣
↪wine', 'price': 120,
 'duration': '2.5 hours', 'start_time': '7:30 PM', 'meeting_point': 'Port de la␣
↪Bourdonnais'}]}
                                                                                ␣
↪



                        Agent Tool Execution
                                                                                ␣
↪
 Agent: Travel Planning Delegator                                               ␣
↪
                                                                                ␣
↪
 Thought: Thought: I will now find activities for May 12, 2025, using the same␣
↪preferences to ensure a
 complete itinerary for all the days.                                           ␣
↪
                                                                                ␣
↪
 Using Tool: Find available activities in a location                            ␣
↪
                                                                                ␣
↪


                         Tool Input
                                                                                ␣
↪
 "{\"location\": \"Paris\", \"date\": \"2025-05-12\", \"preferences\": \"art,␣
↪history, leisure\"}"
                                                                                ␣
↪


                         Tool Output
                                                                                ␣
↪
 {'activities': [{'name': 'Eiffel Tower Skip-the-Line', 'description':␣
↪'Priority access to the Eiffel Tower
 with guided tour of 1st and 2nd floors', 'price': 65, 'duration': '2 hours',␣
↪'start_time': '10:00 AM',
 'meeting_point': 'Eiffel Tower South Entrance'}, {'name': 'Louvre Museum␣
↪Guided Tour', 'description':
 "Expert-guided tour of the Louvre's masterpieces, including Mona Lisa",␣
↪'price': 85, 'duration': '3 hours',
 'start_time': '2:00 PM', 'meeting_point': 'Louvre Pyramid'}, {'name': 'Seine␣
↪River Dinner Cruise',
 'description': 'Evening cruise along the Seine with 3-course French dinner and␣
↪wine', 'price': 120,
 'duration': '2.5 hours', 'start_time': '7:30 PM', 'meeting_point': 'Port de la␣
↪Bourdonnais'}]}
                                                                                ␣
↪
                                                                                ␣
↪
 You ONLY have access to the following tools, and should NEVER make up tools␣
↪that are not listed here:
                                                                                ␣
↪
 Tool Name: Find available activities in a location                             ␣
↪
 Tool Arguments: {'location': {'description': None, 'type': 'str'}, 'date':␣
↪{'description': None, 'type':
 'str'}, 'preferences': {'description': None, 'type': 'str'}}                   ␣
↪
 Tool Description:                                                              ␣
↪
     Find available activities in a location.                                   ␣
↪
                                                                                ␣
↪
     Args:                                                                      ␣
↪
         location: City name                                                    ␣
↪
         date: Activity date (YYYY-MM-DD)                                       ␣
↪
         preferences: Activity preferences/requirements                         ␣
↪
                                                                                ␣
↪
     Returns:                                                                   ␣
↪
         Dictionary containing activity options                                 ␣
↪
                                                                                ␣
↪
```

```
 Tool Name: Delegate work to coworker                                     ␣
↪
 Tool Arguments: {'task': {'description': 'The task to delegate', 'type':␣
↪'str'}, 'context': {'description':
 'The context for the task', 'type': 'str'}, 'coworker': {'description': 'The␣
↪role/name of the coworker to
 delegate to', 'type': 'str'}}                                            ␣
↪
 Tool Description: Delegate a specific task to one of the following coworkers:␣
↪Travel Planning Delegator
 The input to this tool should be the coworker, the task you want them to do,␣
↪and ALL necessary context to
 execute the task, they know nothing about the task, so share absolutely␣
↪everything you know, don't reference
 things but instead explain them.                                         ␣
↪
 Tool Name: Ask question to coworker                                      ␣
↪
 Tool Arguments:…                                                         ␣
↪
                                                                          ␣
↪



                              Agent Tool Execution
                                                                          ␣
↪
 Agent: Travel Planning Delegator                                         ␣
↪
                                                                          ␣
↪
 Thought: Thought: I will now discover activities for May 13, 2025, the final␣
↪day before departure, to
 complete the trip itinerary.                                             ␣
↪
                                                                          ␣
↪
 Using Tool: Find available activities in a location                      ␣
↪
                                                                          ␣
↪
```

Tool Input

```
                                                                     ␣
↪
 "{\"location\": \"Paris\", \"date\": \"2025-05-13\", \"preferences\": \"art,␣
↪history, leisure\"}"
                                                                     ␣
↪
```

Tool Output

```
                                                                     ␣
↪
 {'activities': [{'name': 'Eiffel Tower Skip-the-Line', 'description':␣
↪'Priority access to the Eiffel Tower
 with guided tour of 1st and 2nd floors', 'price': 65, 'duration': '2 hours',␣
↪'start_time': '10:00 AM',
 'meeting_point': 'Eiffel Tower South Entrance'}, {'name': 'Louvre Museum␣
↪Guided Tour', 'description':
 "Expert-guided tour of the Louvre's masterpieces, including Mona Lisa",␣
↪'price': 85, 'duration': '3 hours',
 'start_time': '2:00 PM', 'meeting_point': 'Louvre Pyramid'}, {'name': 'Seine␣
↪River Dinner Cruise',
 'description': 'Evening cruise along the Seine with 3-course French dinner and␣
↪wine', 'price': 120,
 'duration': '2.5 hours', 'start_time': '7:30 PM', 'meeting_point': 'Port de la␣
↪Bourdonnais'}]}
                                                                     ␣
↪
```

Agent Final Answer

```
                                                                     ␣
↪
 Agent: Travel Planning Delegator                                    ␣
↪
                                                                     ␣
↪
 Final Answer:                                                       ␣
↪
 ### Day-by-Day Activity Plan for Paris                              ␣
↪
                                                                     ␣
↪
```

```
 **Day 1: May 8, 2025 (Arrival Day)**
 - **Morning:** Travel to Paris, arrive at hotel, and check-in.
 - **Afternoon:** Rest at the hotel and explore nearby areas, such as Saint-Germain, leisurely.
 - **Evening:** Dinner at a local restaurant.

 **Day 2: May 9, 2025**
 - **Morning:** Eiffel Tower Skip-the-Line Tour
   - **Time:** 10:00 AM
   - **Duration:** 2 hours
   - **Meeting Point:** Eiffel Tower South Entrance

 - **Afternoon:** Louvre Museum Guided Tour
   - **Time:** 2:00 PM
   - **Duration:** 3 hours
   - **Meeting Point:** Louvre Pyramid

 - **Evening:** Seine River Dinner Cruise
   - **Time:** 7:30 PM
   - **Duration:** 2.5 hours
   - **Meeting Point:** Port de la Bourdonnais

 **Day 3: May 10, 2025**
 - Free exploration day with stress on relaxation. Enjoy a café breakfast and spend the day strolling through
```

```
Parisian neighborhoods or relaxing in the hotel spa.

**Day 4: May 11, 2025 (Repeat Structured Day)**
- Same arrangement as Day 2, allowing revisiting or in-depth engagements at preferred locations.

**Day 5: May 12, 2025**
- **Morning:** Relaxation and autonomous exploration - suggested places: Montmartre or Latin Quarter for
artistic insights.
- **Afternoon:** Return to Saint-Germain for shopping or unwinding.
- **Evening:** Leisure walk and dinner by the Seine.

**Day 6: May 13, 2025**
- **Morning:** Revisit favored attractions or last-minute shopping.
- **Afternoon:** Seine River cruise if not previously taken or another enjoyable experience.
- **Evening:** Romantic dinner at a charming venue, celebrating the final evening in Paris.

**Day 7: May 14, 2025 (Departure Day)**
- **Morning:** Check out from the hotel and depart for CDG Airport using pre-arranged taxi service.

This plan ensures Alex enjoys a thoughtful mix of structured activities with relaxation, catering to a
memorable anniversary celebration. The itinerary supports Alex's preferences for engaging, yet moderate-paced
activity with leisure intermissions, ensuring comfort and excitement throughout the stay in Paris.

```

```
=== Delegator Task Complete ===
```

```
[102]: display(HTML('<div style="background-color: #000; padding: 10px; border-radius:␣
        ↪5px; border: 1px solid #d3d3d3;"></hr><h2>  &nbsp; Full travel plan - Report</
        ↪h2></hr></div>'))

       for task in itinerary.tasks_output:
           display(Markdown(task.raw))
```

```
<IPython.core.display.HTML object>
```

- Outbound Flight on May 7, 2025: Delta Airlines from New York (JFK) departs at 5:30 PM, arrives in Paris (CDG) at 6:15 AM, price $780.
- Return Flight on May 14, 2025: Delta Airlines from Paris (CDG) departs at 10:00 AM, arrives in New York (JFK) at 12:30 PM, price $780.
- Total roundtrip cost $1560.

After reviewing the available hotel options that fit within the budget and considering the necessary amenities for a comfortable anniversary stay, I recommend the following hotel:

- **Citadines Saint-Germain-des-Prés**
  - **Price:** $320 per night
  - **Check-in Date:** May 7, 2025
  - **Check-out Date:** May 14, 2025
  - **Location:** Saint-Germain, which is an ideal central location, providing access to many attractions and public transportation options.
  - **Rating:** 4.2/5
  - **Amenities:** Includes a kitchenette, laundry facilities, and Wi-Fi, which are essential for a convenient stay throughout the week.

Why this choice is the best match: The Citadines Saint-Germain-des-Prés offers a well-balanced combination of cost, location, and amenities. It is under the $400 per night budget, allowing some additional budget freedom for other activities, dining, or treats during the stay. Located in the vibrant and centrally located Saint-Germain district, it provides easy access to iconic attractions and transportation, making it convenient for exploring Paris. The availability of a kitchenette adds value, offering the choice of self-catering meals which can be both a romantic option and a budget-friendly choice.

This hotel provides comfort, good reviews, and practical amenities, making it a suitable choice for an enjoyable and memorable anniversary trip to Paris.

Here is the recommended transportation plan for the trip in Paris:

1. **Airport to Hotel Transfer:**

    - **Recommended Option:** Taxi
        - **Cost:** Approximately €50
        - **Duration:** 45 minutes (depending on traffic)
        - **Pros:** Provides door-to-door service and comfort after a long international flight, ideal for travelers with luggage.
        - **Cons:** More expensive than public transport, subject to traffic delays.
2. **Daily Activities Transportation:**
    - **Recommended Option:** Paris Visite Pass (for public transportation)
        - **Cost:** €12 per day for unlimited travel
        - **Usage:** Valid for metro, buses, and RER trains
        - **Pros:** Offers convenience for multiple activities and daily exploration, includes discounts to attractions, fast travel avoiding surface traffic.
        - **Cons:** Can be crowded during peak hours.
3. **Hotel to Airport Transfer:**
    - **Recommended Option:** Taxi
        - **Cost:** Approximately €50
        - **Duration:** 45 minutes (depending on traffic)
        - **Pros:** Provides a stress-free departure with direct service to the airport.
        - **Cons:** Higher cost, but ideal for ensuring timely arrival for an international flight.

These recommendations balance convenience, efficiency, and cost-effectiveness, aligning well with the traveler's preferences and itinerary needs. Essential contact details or app recommendations for booking taxis in Paris include apps like "G7" or "Taxi Bleus" for reliable services.

7-Day Paris Itinerary

Day 1: May 7, 2025 - Arrival and Relaxation - **Morning**: Arrival at Paris (CDG) at 6:15 AM. Transfer to Citadines Saint-Germain-des-Prés by taxi (€50). - **Afternoon**: Check-in, freshen up, and relax at the hotel. Take a leisurely stroll around Saint-Germain area. - **Evening**: Relax at a nearby café for dinner, soaking in local ambiance.

Day 2: May 8, 2025 - Iconic Landmarks - **Morning**: Visit the Eiffel Tower with Skip-the-Line access and guided tour of 1st and 2nd floors (Starting at 10:00 AM, €65). - **Afternoon**: Lunch in the area, followed by relaxation at nearby Champ de Mars. - **Evening**: Seine River Dinner Cruise (7:30 PM, €120).

Day 3: May 9, 2025 - Artistic Exploration - **Morning**: Louvre Museum Guided Tour to explore masterpieces including the Mona Lisa (Starting at 10:00 AM, €85). - **Afternoon**: Lunch at a local bistro. Walk around the Tuileries Garden. - **Evening**: Casual evening, perhaps at a local boulangerie or patisserie.

Day 4: May 10, 2025 - Historical Insights - **Morning**: Extended walking tour through Montmartre, Sacré-Cœur (self-guided, enjoy leisurely pace). - **Afternoon**: Lunch in Montmartre. Visit local galleries and enjoy panoramic views. - **Evening**: Free time for rest or spontaneous activities.

Day 5: May 11, 2025 - Parisian Lifestyle - **Morning**: Leisurely morning with breakfast at a local café. Visit Sainte-Chapelle. - **Afternoon**: Relaxation time at Luxembourg Gardens. - **Evening**: Explore Latin Quarter for dinner.

Day 6: May 12, 2025 - Romantic Evening - **Morning**: Day trip to Château de Versailles. Explore the gardens and palace (ensure pre-booked tickets). - **Afternoon**: Return to Paris. Relax at the hotel. - **Evening**: Enjoy a romantic dinner at a pre-selected romantic restaurant.

Day 7: May 13, 2025 - Last Explorations - **Morning**: Early visit to Notre-Dame Cathedral and shared breakfast at Île de la Cité. - **Afternoon**: Final shopping or walking tour based on interests. - **Evening**: Farewell walk along the Seine, capturing sunset views.

Day 8: May 14, 2025 - Departure - **Morning**: Check-out and taxi transfer to Paris (CDG), €50 for a comfortable end to the trip. - **Flight**: Delta Airlines departs at 10:00 AM, arrives in New York (JFK) at 12:30 PM, cost $780.

This itinerary provides a balanced mix of exploration, relaxation, and iconic experiences, ensuring that the traveler has both memorable and comfortable experiences throughout their anniversary trip to Paris.