1. Additional Research and Assumptions
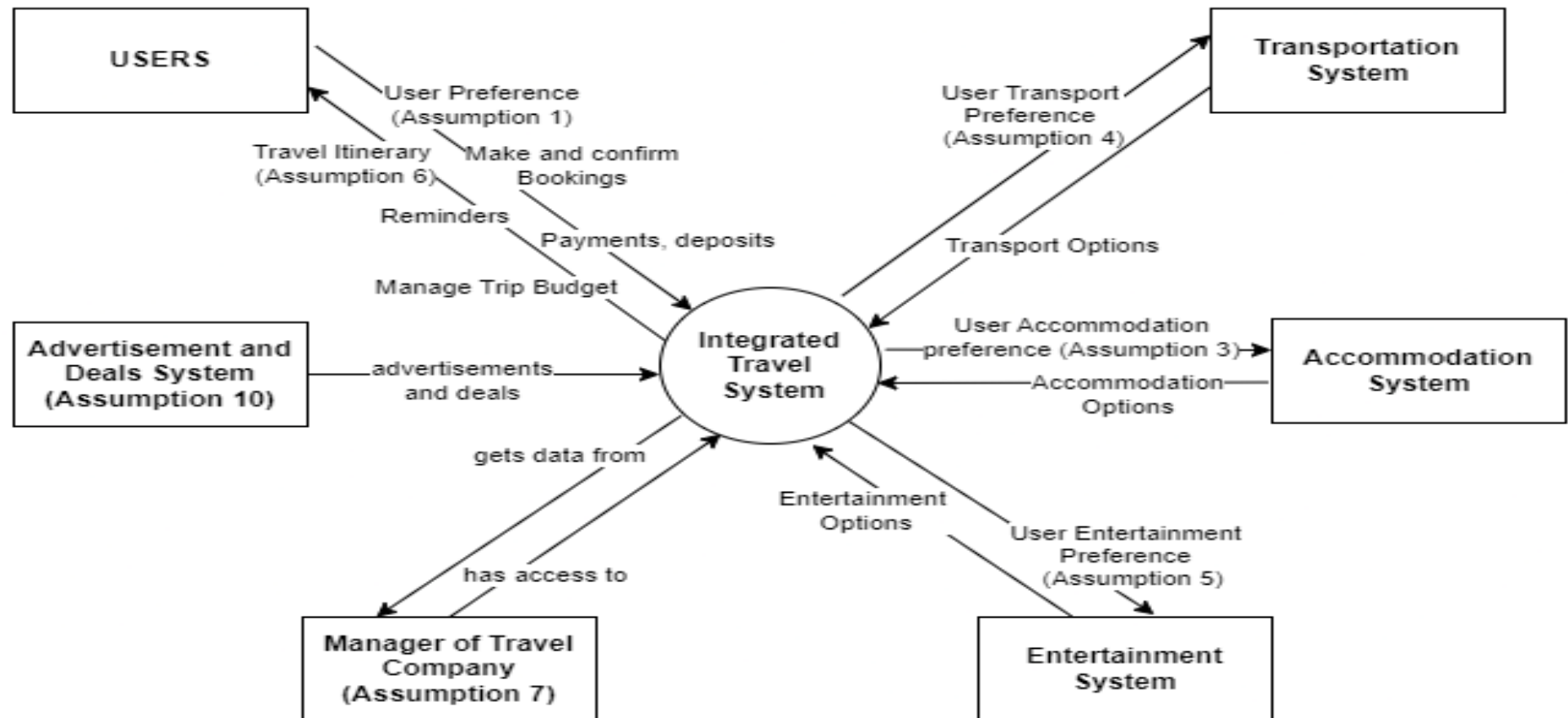
For this particular case study, we have taken an inspiration from the working of a website called "MakeMyTrip" It's an Indian online travel company founded in 2000. The company provides online travel services including air tickets, domestic and international holiday packages, hotel reservations, railway and bus tickets". We have referred to two amazing case studies on "MakeMyTrip" (Wane 2013) and (Barapatre 2014) available on the internet and have built our assignment accordingly.

Assumptions:

- Assumption 1: user preference covers everything from dates and times of travel, overall budget, accommodation preference, travel preference, entertainment

- Assumption 2: The integrated travel system will split the user preference into 3 categories: user accommodation preference, user transport preference and user entertainment preference and sent these three preferences to accommodation system, transport system and entertainment system respectively.

- Assumption 3: user accommodation preference covers everything from type of accommodation, budget, location, facilities, stars, room capacity

- Assumption 4: user transport preference covers everything from mode of transport, budget, facilities, preference and any other preferences as stated by the user

- Assumption 5: user entertainment preference covers everything from type of entertainment, budget, location, facilities, dates, time, age

- Assumption 6: Travel Itinerary will contain all the recommended travel, accommodation and entertainment options based on the user preference

- Assumption 7: There is a 'Manager of Travel Company' who manages the employees.

- Assumption 8: The travel company taken under consideration is a small to medium scale company. It has around 10 employees and 1 manager.

- Assumption 9: The system will send a reminder to user 8 hours before the time of travel or entertainment. e.g.: If user has a flight on Monday at 22:00 hrs, the system will send a reminder to user at 14:00 hrs.

- Assumption 10: There is a separate "Advertisement and Deals System" which will have information about all the ads and deals on offer. It will generate relevant ads and deals for user based on the user preference.

- Assumption 11: User cannot use the Integrated Travel System just to book stand-alone options of either transport, accommodation or entertainment options. User has to select a minimum of one transport, one entertainment and one accommodation option to proceed.

2. Context Diagram

USERS

User Preference (Assumption 1)

Travel Itinerary (Assumption 6)

Make and confirm Bookings

Reminders

Payments, deposits

Manage Trip Budget

Advertisement and Deals System (Assumption 10)

advertisements and deals

gets data from

has access to

Manager of Travel Company (Assumption 7)

Integrated Travel System

User Transport Preference (Assumption 4)

Transport Options

Transportation System

User Accommodation preference (Assumption 3)

Accommodation Options

Accommodation System

Entertainment Options

User Entertainment Preference (Assumption 5)

Entertainment System

3. Data Dictionary

3.1 Algebraic Data Dictionary

a. Travel Itinerary = 1{Transport Option}* + 1{Accommodation Options}* + 1{Entertainment Options}* + cost of the entire package
   (Assumption 12)

b. Payments = ["Cash" | "Cheque" | "Card" | "Online Transfer"]

c. User Preference = User Personal Information + 1{Preferred mode of transport}* + 1{departure locations}* + 1{arrival locations}* + 1{hotel locations}* + preferred hotel ratings + preferred accommodation size + number of guests + 1{choice of entertainment}* + budget range

d. User Personal information = First Name + Last Name + Email-Id + (Phone Number) + (Address)

e. Advertisement and deals = 1{Advertisement and deal}*

3.2 Tabular Data Dictionary

Data Element	Description	Data Type	Length/Format	Example
User ID	Each user will have an unique User Identification Number	Int	XXXXX	12345 45898 34789
Trip ID	For each trip planned an unique identifier code will be generated	Int	XXXX	8765 9075 4367 3278
First Name	First name of the user	String	20 Characters	Santhosh Neeraj Survesh Kevin
Last Name	Last name of the user	String	20 Characters	Mayuram David
Email	Email address of the user	Email Address	\<String>@\<Domain Name>	santhosh@gmail.com neeraj@uni.canberra.au sarvesh@yahoo.com kevin@gmail.com
Password	User's login password for the integrated travel system	String	20 Characters	My@P@assword P@assw0r@d
Travel Dates	Start and end dates of the travel	Date/Time	DD/MM/YYYY	01/12/2023 06/05/2023 08/02/2021
Transport Type	Type of transport chosen for the trip	String	20 Characters	Airlnes Railways buses trams
Departure Date	Date and time of departure	Date/time	DD/MM/YYYY HH:MM	05/12/2023, 23:15 08/12/2022, 22:10
Arrival Date	Date and time of the departure	Date/time	DD/MM/YYYY HH:MM	05/12/2023, 23:15 08/12/2022, 22:10
Accommodation	Name of the accommodation	String	50 Characters	Novotel hotel Ibis budget sydney
Room type	Type of the room booked for accommodation	string	50 Characters	Single room Double Room Deluxe Double room

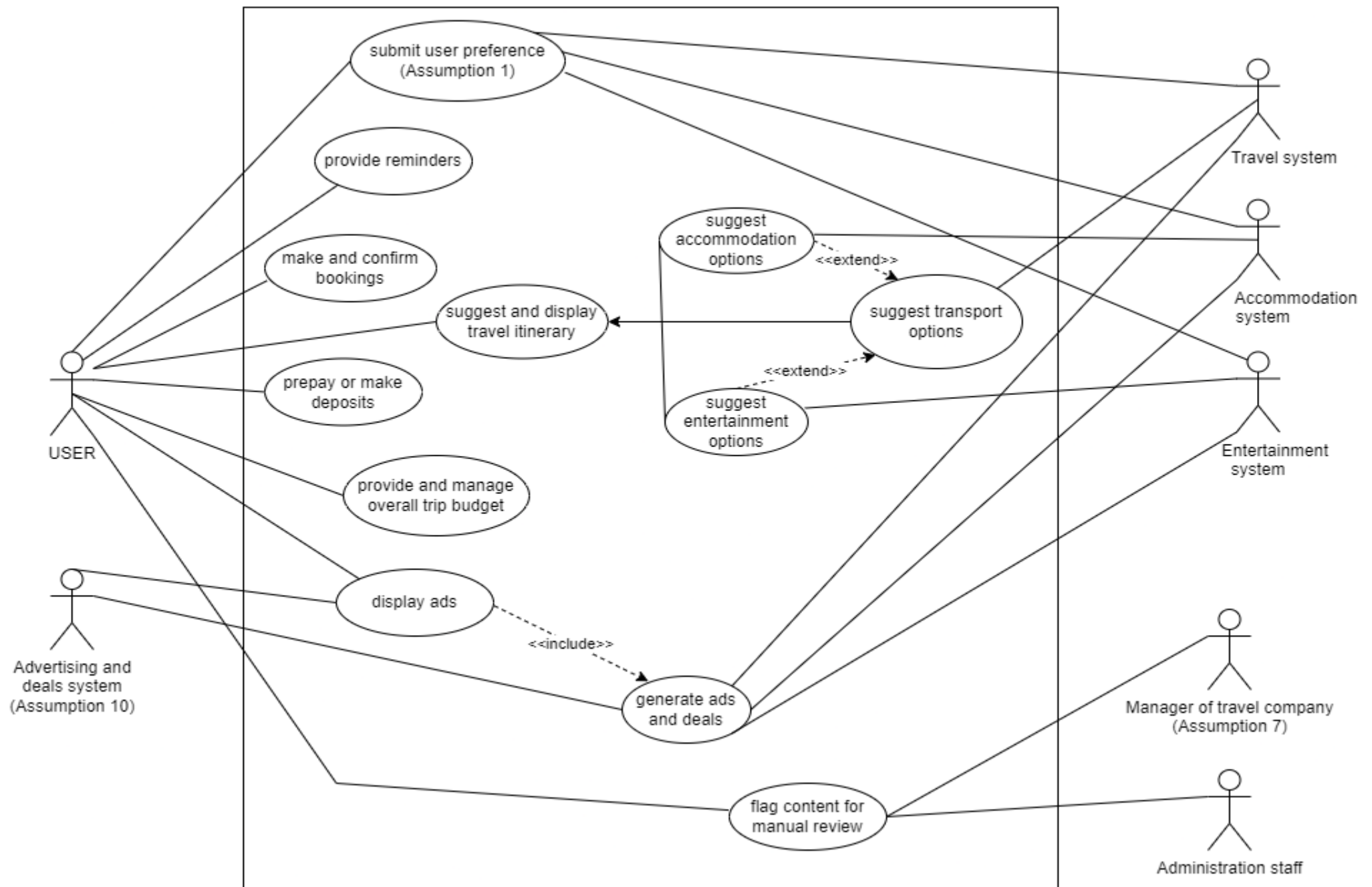|				
Check In – Check out	Date/time of check in and check out of the accommodation	Date/Time	DD/MM/YYYY HH:MM	04/02/2021, 10:20 04/01/2023, 11:15
Entertainment Services	Name of the entertainment service	String	50 Characters	Laser show Drone Display Air Show
Advertisement	Name of the advertisement that is being offered	String	50 Characters	40% off on single room 20% off for new year

4. Data Flow Diagrams
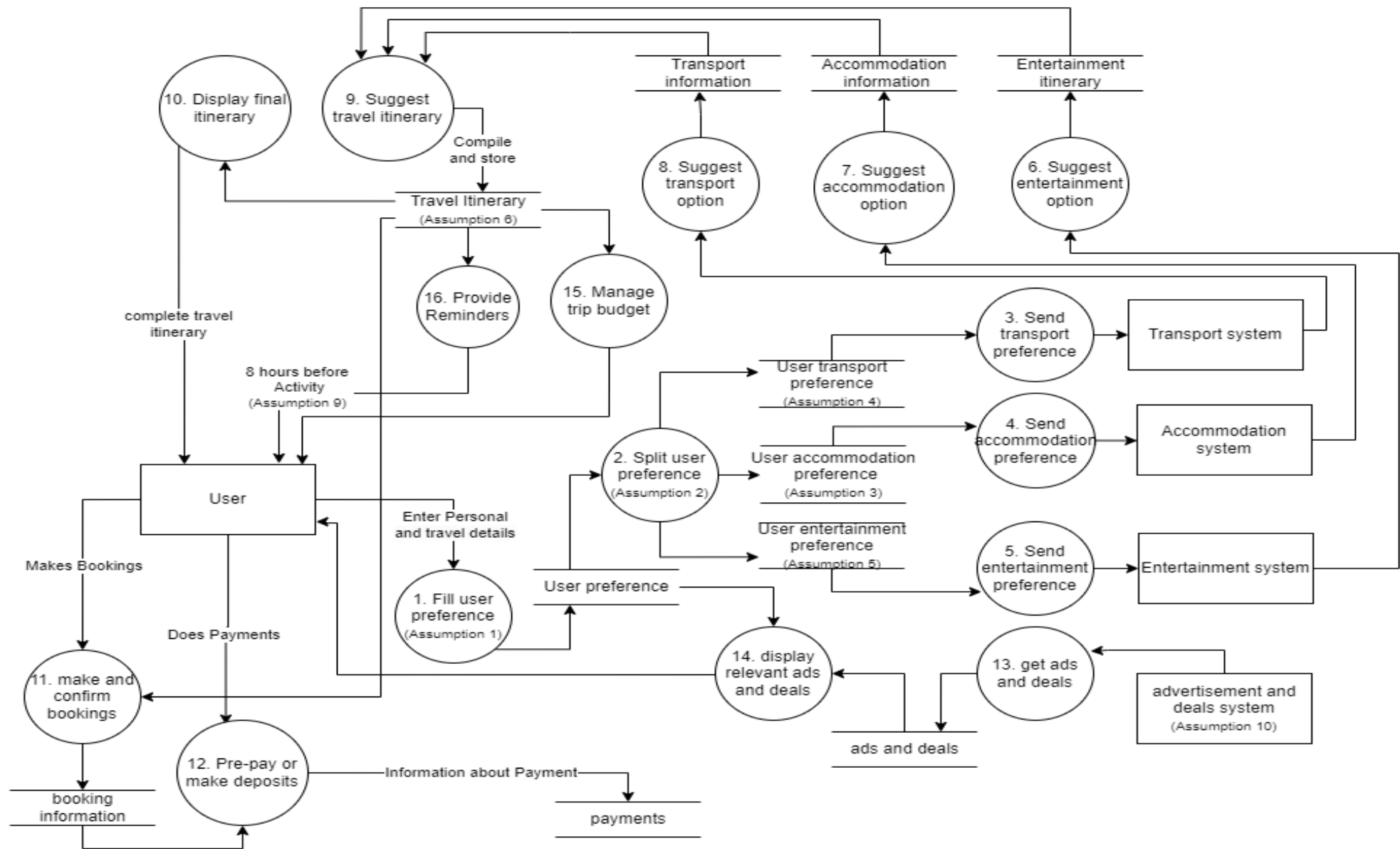
5. Process Specification

Process: Suggest Travel Itinerary

GET:	the transport option, accommodation option and entertainment option
LOOP:	start the loop for every option that comes in
IF:	the suggested transport, accommodation and entertainment options are complete, and consistent (check-in and check-out times are in cohesion with the time of transportation)
THEN:	Forward this data into the "Travel Itinerary" Data Store
ELSE:	Identify the fault.
	Request the corresponding system or systems (transportation, accommodation entertainment) to rectify the mistake and provide new and different respective options (transportation, accommodation entertainment)
END LOOP:	End the loop after the system checks that transport, accommodation and entertainment options are complete, consistent and are in sync with each other.

We have selected "Suggest Travel Itinerary" process for developing process specification. The said process has got some complexity associated with it. There are 3 inputs coming into the process from Transport information, Accommodation information and Entertainment Information data stores. The said process then compiles all the data received and makes a compiled travel itinerary and stores it in "Travel Itinerary" data store.

If the process finds that the information it receives is incomplete, inconsistent then it requests the corresponding external system to provide new and accurate information. The process will keep looping (calling itself) until it gets data that is complete accurate and consistent.

6. Use case diagram:

7. Use case Description:

Use case name	Suggest and Display Travel Itinerary
Short description	The system suggests the complete Travel Itinerary to the user based on the user preference submitted by the user. The "travel itinerary" includes the transportation, accommodation and entertainment options.
Precondition	User preference has been submitted by the user. System has received the accommodation, transport and entertainment options from the accommodation, transportation and entertainment systems respectively.
Postcondition	The suggested travel itinerary is displayed to the user.
Error situations	Incomplete, inconsistent (check-in, check out times are not in cohesion with the time of transport option suggested) and/or no information is received from the transportation system, accommodation system and entertainment system regarding transport options, accommodation options and entertainment options respectively.
System state in event of an error	The system will not display the travel itinerary to the user.
Actors	Users.
Triggers	When the system receives transportation options, accommodation options and entertainment options from transportation system, accommodation system and entertainment system respectively.
Standard process	1. System gets the information about suggested transportation options, suggested accommodation options and suggested entertainment options from the transportation, accommodation and entertainment systems respectively. 2. System combines all the received information into a single travel itinerary. 3. System compares the travel itinerary with the user preference. 4. System makes sure that the all the information is complete, consistent (check-in, check-out times are in cohesion with the time of transportation) and is in alignment with the user preference. 5. System displays the information to the user.
Alternative process	4'. The travel itinerary is incomplete and/or inconsistent when checked against the user preference. 5'. System identifies the fault. 6'. System requests the corresponding system or systems (transportation, accommodation, entertainment) to rectify the mistake and provide new and different respective options (Transportation, accommodation, entertainment). 7'. Return to step 2.

We have selected the use case "Suggest and Display Travel Itinerary" for developing the Use Case description. From the Use Case diagram, it is quite evident that the Use Case has some complexity associated with it. There is generalization happening. "Suggest Accommodation Options", "Suggest Travel Options" and "Suggest Entertainment options" use cases are generalized to form the "Suggest and Display Travel Itinerary". We can also find that an extends relationship is there between the "Suggest Accommodation Option" and "Suggest Travel Option" use case. There's another extends relationship between "Suggest Entertainment Option" and "Suggest Travel Option" use cases. As these use cases are generalized further into "Suggest and Display Travel Itinerary", we need to take under consideration this relation while developing the use case description.

"Suggest and Display Travel Itinerary" is the most important and interesting use case of all the use cases because of the work this use case has to do. The use case has to first compile the data received from all the systems into one travel itinerary, then check for the consistency and completeness of the travel itinerary against the user preference. If everything is complete and consistent, then it displays the travel itinerary to the user. If there are some inconsistencies or incompleteness, then the system will ask the corresponding transportation, accommodation, entertainment systems to rectify their mistakes and provide new and different corresponding option.

8. References

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