



**Software Engineering  
COMP433**

**Group Project**

**Group Name: OutOfIndex**

**Project Manager: Simon Asmar**

**S-ID: 1162643**

**Secretary: Sabry Alawy**

**S-ID: 1162074**

**Technical Architect: Laith Marzouka**

**S-ID: 1160827**

**Programmer: Layth Abufarhah**

**S-ID: 1162636**

**Instructor: Dr. Adel Taweel**

**Section: 1**

## Phase Two: Task 2.2-2.4

### User & System Requirements + Effort & Time Estimation (Project No.9, Flight Booking)

- **UR1: System Registration**

- SR1.1: Employee System Registration:**

- SR1.1.1:** There is one Manager account in which he shall:

- a. Create accounts for employees.
      - b. Search for employees (check UR3).
      - c. Change employees' information.
      - d. Authorize/Deauthorize employees from System Accessing Privileges (SAP) (check UR3-SR3.1, UR4-SR4.1.1):
        1. SAP1.
        2. SAP2.
      - e. Delete employees' accounts from the system.
      - f. add /remove job titles.
      - g. Manage Flights (check UR2).

- SR1.1.2:** Employees' accounts are registered based on this information:

- a. Employee ID.
      - b. Full name.
      - c. Gender.
      - d. Date of birth.
      - e. Phone number.
      - f. Job title.
      - g. Email address.
      - h. Password.

- SR1.1.3:** All of the above information must be filled.

- SR1.1.4:** Employee ID is unique and is set by the manager and is not necessarily incremental.

- SR1.1.5:** Job title is not arbitrary and must be selected from a list of job titles. However, there is an option 'other' and should be filled in a suitable manner.

- SR1.1.6:** If a job title is removed but there exist employees with such job title, then their job title remains the same as if it was an 'other' option.

- SR1.1.7:** Employees shall access their information on the system, and shall only change their email address or password. If any other information is in need to be changed, employees have to contact the manager or employees with 'SAP1'.

- SR1.2: User System Registration:**

- SR1.2.1:** Users shall register by entering the following information:

- a. Full name.
      - b. Gender.
      - c. Date of birth.
      - d. Email address.
      - e. Password.

**SR1.2.2:** All of the above information must be filled.

**SR1.2.2:** Signed-in users may set a fixed payment method for easier future bookings.

**SR1.2.3:** Users shall change their information/payment method at any time.

**SR1.2.4:** Signed-in users shall see the history of their previous bookings.

**SR1.2.5:** Signed-in users shall have a 20% sale on the next ticket after every 5 tickets successfully purchased.

- **UR2: Manage Flights**

- SR2.1: Add Flights:**

- SR2.1.1:** Authorized employees shall add a new flight to the system with the following information:

- a. Unique flight number.
      - b. The number of seats for every class (first, business, economy)
      - c. Departure location & arrival destination.
      - d. Date & time of departure/arrival.
      - e. Duration of the flight.
      - f. Staff (pilots, pilot assistants, flight attendants, etc...).
      - g. Baggage prices for every weight (10kg and 23kg).
      - h. Flight meals.
      - i. Price of tickets for every class (first, business, economy).
      - j. Percentage of sale if any.

- SR2.1.2:** All of the above information must be filled.

- SR2.1.3:** Flight number is unique and is assigned by authorized employees and is not necessarily incremental.

- SR2.1.4:** Staff members are added by choosing a job title, then a suitable list of available staff members will appear. This list has employees' names and IDs.

- SR2.1.5:** Available staff members are the ones that have no flights at the time of the added flight.

- SR2.1.6:** The flight is saved to the staff members record

- SR2.2: Alter Flights:**

- SR2.2.1:** Authorized employees should change the following information about a flight:

- a. Date/Time.
      - b. The number of seats for every class.
      - c. Baggage price.
      - d. Staff.
      - e. Meal.
      - f. Price of tickets for every class(first, business, economy).
      - g. Sale percentage if any.

**SR2.2.2:** If a booked flight date/time is changed, then an email (if provided) must be sent to the email addresses of all customers who booked this flight.

**SR2.2.3:** Email body is filled by the authorised employee who changed the flight date/time.

**SR2.2.4:** Changes in price do not affect already purchased tickets.

### **SR2.3: Remove Flights**

**SR2.3.1:** Flights booked by at least one customer should only be removed using the manager's account.

**SR2.3.2:** If a booked flight is removed, then an email (if provided) must be sent to the email addresses of all customers who booked this flight.

**SR2.3.3:** Email body is filled by the manager at the time when the flight had been cancelled.

**SR2.3.4:** The flight is removed from the staff members record.

## ● **UR3: Search for Employees & Their Flight Records**

**SR3.1:** Authorized employees (Manager & 'SAP1') should search for employees based on:

1. Employee ID.
2. Name.
3. Job title.

**SR3.2:** The list should display all of these employees' information, as well as a table of their flight records which is saved in the database for the captain, co-pilot, flight attendants etc.

## ● **UR4: Search for Flights & Tickets**

### **SR4.1: Employees' Search for Flights:**

**SR4.1.1:** Authorized employees (Manager & 'SAP2') should search for flights based on:

1. Flight number.
2. Date/Time of flight.
3. Departure/arrival location.
4. A staff member ID (Flights that this member is involved with).

**SR4.1.2:** The list should display all of these flights' information.

### **SR4.2: Users' Search for Flights:**

**SR4.2.1:** Any user should be able to search for any flight registered in the system.

**SR4.2.2:** There are two main types of search for the user: 1) one-way 2) round-trip.

**SR4.2.3:** User search is basically based on:

- a. Departure location.
- b. Destination.
- c. Date of departure.
- d. Date of the return (**for a round-trip**).
- e. The number of passengers.
- f. Cabin class.

**SR4.2.4:** A list of flights should be displayed in accordance with the above parameters.

**SR4.2.5:** The single flight will display:

- a. Flight number.
- b. Date & time of departure.
- c. Date & time of arrival.
- d. Duration of flight.
- e. price of the ticket.
- f. The number of seats available.
- g. Meals.

#### ❑ **Order of Flights**

**SR4.2.6:** Tickets on sale should be displayed first as recommended.

**SR4.2.7:** The list should be ordered based on the best time/price correspondence.

**SR4.2.8:** The additional filters that must also be applicable to affect the order:

1. Price.
2. Time of the departure/arrival.
3. Duration of the total trip.
4. The number of stops.

#### ❑ **Transit Trips**

**SR4.2.9:** If there does not exist a direct flight, transit flights shall be displayed (trip displayed as a package).

**SR4.2.10:** These transit flights connect the departure point to the arrival destination indirectly.

**SR4.2.11:** This trip package should be expanded to check the locations of stops, duration of waiting between flights, information about every flight engaged in this transit trip as described.

#### ❑ **For Round-Way Trips**

**SR4.2.12:** Additional flights should be displayed for returning to the departure location from the arrival destination depending on the date of the return (trip displayed as a package).

**SR4.2.13:** This trip package should be expanded to check the information about every flight individually as described.

**SR4.2.14:** Any customer should be able to search for for a flight's information using the Ticket ID.

**SR4.2.15:** If the Ticket ID is valid, the flight's information will display as indicated in (UR4-SR4.2.5).

- **UR5: Book Flights**

**SR5.1:** The first step is choosing the check-in baggage for the flight.

**SR5.2:** There are two sizes of baggage 10kg and 23kg.

**SR5.3:** A maximum of 2 pieces of any size of baggage is accepted to be added.

**SR5.4:** Next step is filling a form that contains: Full name, gender, date of birth.

**SR5.5:** Email address may be provided as well, but it is not necessary.

**SR5.6:** Payment is the last step (check UR6).

**SR5.7:** After a successful booking, the electronic ticket (e-ticket) shall be displayed and is able to be printed.

**SR5.8:** If the email address is provided, then a copy of the e-ticket is sent to the email address as a PDF form.

**SR5.9:** The form of the ticket is provided as an HTML page from the company.

- **UR6: Transactions (Payments)**

**SR6.1:** The last step of booking is the payment. Which should be done using: PayPal, VisaCard, or MasterCard.

**SR6.2:** The System must guarantee the security of the user's information and payment method.

**SR6.3:** If a flight gets cancelled the money gets refunded.

## Effort & Time Estimation

	Estimated Effort	Estimated # of Developers	Total Effort
UR1	2pw	2	$2 * 2 = 4pw$
UR2	3pw	3	$3 * 3 = 9pw$
UR3	1pw	1	$1 * 1 = 1pw$
UR4	3pw	3	$3 * 3 = 9pw$
UR5	2pw	2	$2 * 2 = 4pw$
UR6	1pw	1	$1 * 1 = 1pw$
Total Effort/Avg	12pw	$12/6 = 2$ dev on avg needed	28pw
Schedule Time 30%	$12 * 1.30 = 16w$ (min time)		$28 * 1.3 = 37w$ (max time)
Cost		Avg Salary: \$300	$\$300 * 37w = \$11,100$
Profit Margin (min: 20%) (max: 50%)		Min Cost → Max Cost →	$\$11,100 * 1.20 = \$13,320$ $\$11,100 * 1.50 = \$16,650$

**Agreed on:** \$17,000  
34 weeks