OPEN-BOOK PRACTICAL EXAMINATION

INFORMATION SYSTEMS MODELLING & DESIGN

2023-2024

This is a **120-minutes** examination.

INSTRUCTIONS TO STUDENTS

i. Read ALL the instructions carefully.

ii. Items ALLOWED for this open book examination:

a) Physical and/or Digital Core textbook

b) *Any Journals from*

- Singapore National Library ProQuest Computer Science e-database journals.

c) Lecture Notes and handwritten/typeset notes.

d) Draw.io and Visual Paradigm (online)

iii. Items **NOT** allowed are and not limited to:

- Programmable calculator and an English Language 'translator'; Mobile phones *(Use only when need technical support)* Smart watches and bands; Electronic devices (including additional monitors, earphones, headphones etc.); Headwear (hats, hoodies excluding religious headwear.

iv. You will need to be in a quiet space for the duration of your exam with no interruptions.

v. You will need to check all your computer/laptop to ensure that they are set up correctly.

vi. You must only attempt this exam once. Any additional attempts should only be used in the event where a serious technical issue has occurred and supporting evidence supporting this will be required.

vii. You are not permitted to obtain assistance by improper means or ask for help from or give help to any other person.

viii. Marks are awarded only for answers that are clearly typeset/written in the space provided.

ix. This Examination Question Paper consists of **THREE (3) QUESTIONS** :

QUESTION 1-3 Compulsory Questions. This assessment is worth **50%** of the overall marks.

x. Candidates MUST attempt ALL the questions set in this examination assessment.

xi. Total Marks Allocated = 50 marks.

xii. You may also contact the LSBF exam hotline (exams@lsbf.edu.sg or pkesavan@lsbf.edu.sg).

xiii. Any technical issues during the exam must be directed to exams@lsbf.edu.sg or pkesavan@lsbf.edu.sg Live support.

xiv. This Examination Question Paper consists of **SIX (6) pages** including this cover page.

Student declaration

By attempting this exam, I acknowledge that,

- I agree to be bound by the London School of Business and Finance (LSBF), Singapore's rules, codes of conduct, and other policies relating to examinations.
- I have read and understand the examination conduct requirements for this exam.
- I am aware of the university's rules regarding misconduct during examinations.
- I am not in possession of, nor do I have access to, any unauthorised material during this examination.
- I agree not to obtain assistance by improper means or ask for help from or give help to any other person.
- I agree not to post any requests for clarification of exam content.
- I agree to answer all questions to the best of my ability and perception of the questions' intent, make reasonable assumptions, if necessary, to answer all questions.
- I am aware that misconduct action will be taken against me if I breach the LSBF, Singapore rules.

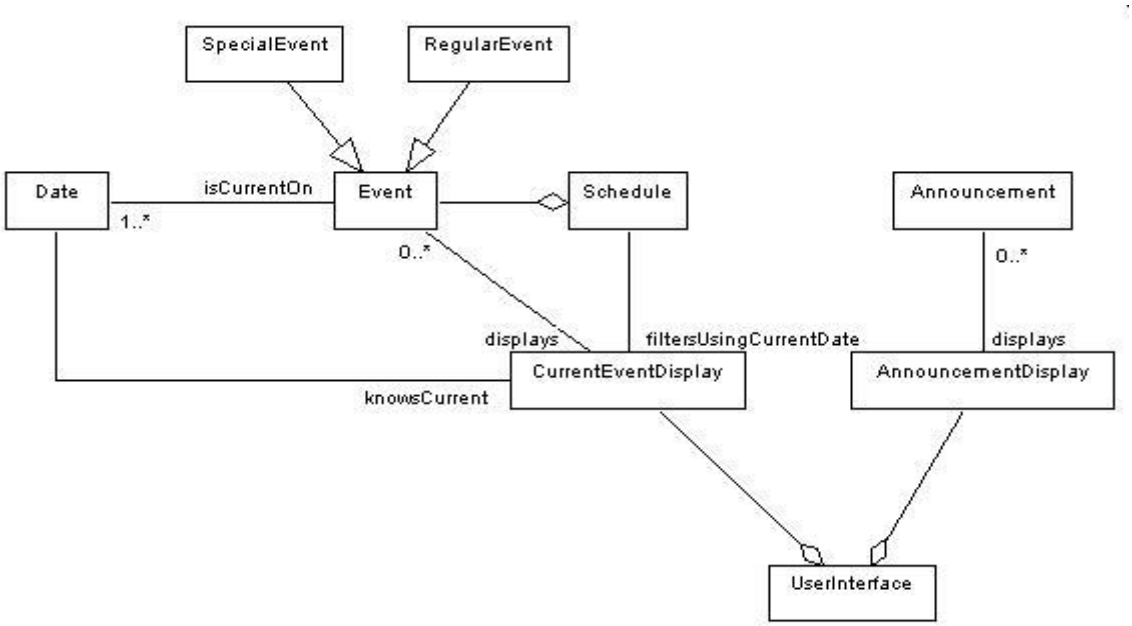
Information Systems Modelling & Design

ANSWER ALL QUESTIONS [50 MARKS]

QUESTION 1 **[10 Marks]**

Consider the following model of a scheduling system and answer the following questions:

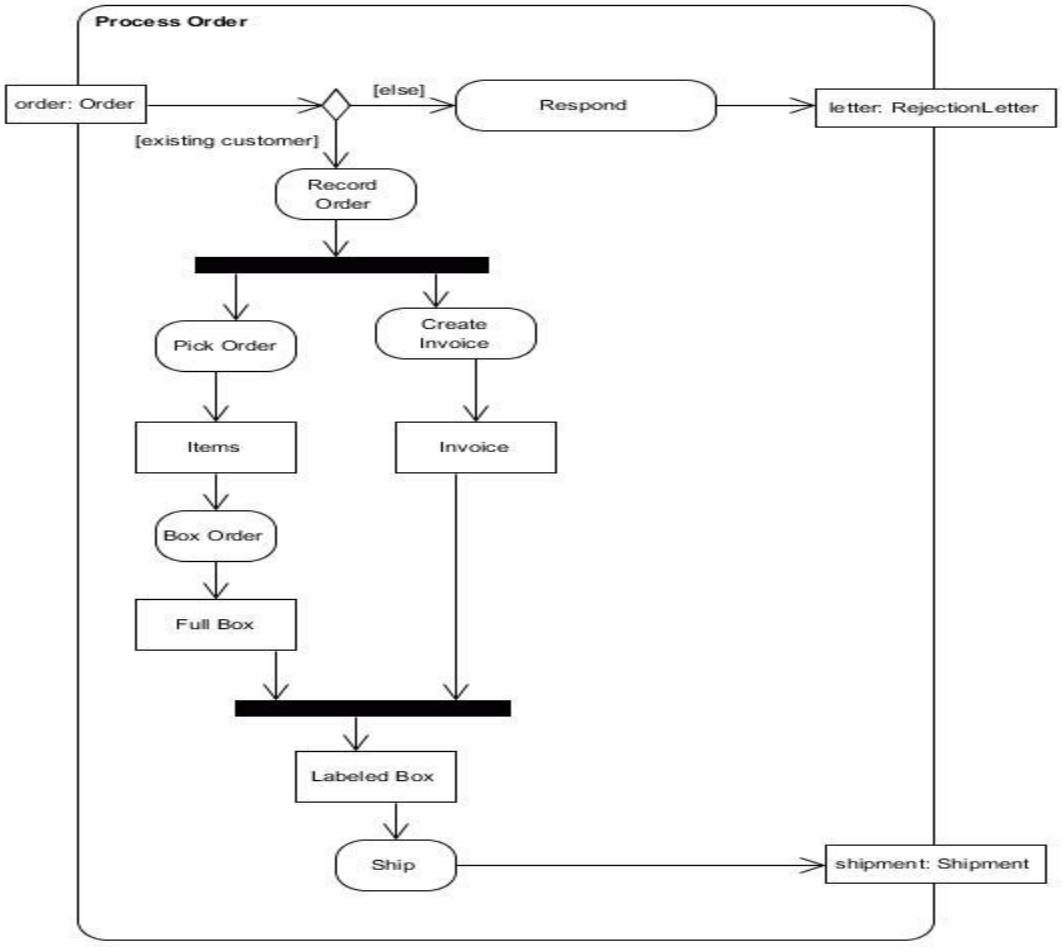
a) Explain if the CurrentEventDisplay can display both SpecialEvents and RegularEvents?
b) Explain if CurrentEventDisplay can display multiple events?
c) Discuss if a Schedule can contain an Announcement?
d) Explain if an Announcement is associated with one or more Dates?
e) Discuss if SpecialEvent is associated with one or more Dates?



QUESTION 2 **[20 Marks]**

Consider the following UML Activity Diagram and answer the following questions:

a) Identify all the activities in this diagram.
b) Identify all the object/data nodes in this diagram.
c) Identify all the actions in this diagram.
d) Identify all the decision nodes in this diagram.
e) Identify all the fork nodes in this diagram.
f) Identify all the join nodes in this diagram.
g) Identify a control flow in this diagram.
h) Identify a data flow in this diagram.
i) Explain if "Pick Order" and "Create Invoice" can occur at the same time?
j) Explain if "Record Order" and "Ship" can occur at the same time?



QUESTION 3 **[20 Marks]**

Case Scenario

Create a Use Case Diagram (in UML) for the following Use Case Scenario description of an **Internet Auction System**:

a. **Types of users**

i. **Anyone**

1. Anyone may use the search features of the system.
2. Anyone may look at an auction's information.

ii. **Members**

1. Only members may bid or place items for sale.
2. All members must register with the system.
3. Members must supply their name and a valid e-mail address.
4. After registering, the system will create an account for the member.
    a. A password will be mailed to the e-mail address specified.
5. Members must log in to bid or place an item for sale.
6. Members who forget their password can have it re-mailed to them.

b. **Auctions**

i. **An auction involves an item, a seller, and zero or more bidders.**

ii. **Items and sellers**

1. Sellers put up items for auction
2. The item must include a name, a closing time, and a minimum bid.
3. The item may include a description and a picture.
4. Sellers may have any number of auctions active at one time.

iii. **Bids and bidders**

1. Any member may bid in any auction.
2. Bids may be placed at any time before the closing time.
3. A bid must be at least the minimum bid, and higher than any bid so far.

iv. Ending an auction.

1. No matter how an auction ends, it is immediately removed from the list of active auctions.

2. If no bids are placed before the closing time, the auction is closed unsuccessfully, and the seller notified by e-mail.

3. If at least one legal bid has been placed before the closing time, the auction is closed successfully. The winning bidder and the seller are both mailed each other's contact information and the winning bid.

4. The seller may cancel the auction up to 24 hours before the closing time. All bidders on this auction will be mailed a notice of the cancellation.

c. Searching

i. Any user may search through active auctions by keyword.

ii. All active auctions with name or description containing the keyword are presented to the user.

1. The auctions are sorted by closing time in chronological order.

2. The user may click a link to go directly to the auction.

i. Identify and name all the stakeholders of the **Internet Auction system**.

[5 marks]

ii. Identify all the use cases in the Internet **Auction System** case study and represent them in a **UML use case diagram**. Note: Do not forget to document your assumptions, if you make any. **[15 marks]**

TOTAL [50 MARKS]

-END OF QUESTION PAPER-