FACULTY OF COMPUTING & INFORMATION TECHNOLOGY
KING ABDULAZIZ UNIVERSITY

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كلية الحاسبات وتقنية المعلومات
جامعة الملك عبدالعزيز

Computer Science Department
CPCS202, 1st Term 2019 (Fall 2018-2019)
Program 2: Red Sea Logistics
Assigned: Sunday, October 14th, 2018
Due: Sunday, October 28th, 2018, or LATE (25% deduction) by Monday

Course Learning Outcomes (CLOs 1,2,3,4,5,6,7,13) Student Outcomes SOs (c, c, b, a, a, a, a, a)

Purpose:

1. The purpose of this Assignment is to make use selection statements in some real world problem.

Read Carefully:

- This program is worth **6%** of your final grade.

- **WARNING**: This is an individual assignment; you must solve it by yourself. Any form of cheating will result in receiving **–4%** (less than zero) in the program.
- The deadline for this project is by **10:59 PM on Sunday, October 28th, 2018.**
    - **Note:** once the clock becomes 10:59PM, the submission will be closed! Therefore, in reality, you must submit by 10:58 and 59 seconds.

- **LATE SUBMISSION:** you are allowed to make a late submission, but there is a penalty. If you submit **within 24 hours** of the due date (so on Monday by 10:59 PM), you will receive a 25% deduction. You will NOT be able to submit after this date/time.

- **Blackboard Submission**:
- This assignment must be submitted online via blackboard
- If your file is empty or you upload the wrong file, it will be solely your responsibility, and your grade will be **zero**.
- Your program (source file) should be named as:
  SectionNameStudentIdAssignmentNumber.java
  Example: CA1110348Ass2.*java*

Project 2 Description:

The **Red Sea Logistics** offers national and international freight services to its customers. The company needs a program that allows the customers to calculate national and international shipment cost. There are different rates for different freight types and shipment weight categories. For instance, the rate is higher for low weight parcels, while international freight rates are higher than national freight rates. Similarly, air freight cost is higher than sea freight. The total shipment cost also includes tax and insurance amount. Details of all these rates and categories are shown in the Table 1.

Write a Java program that prompts the user to enter the scope of cargo (National or International), the freight type (National, Sea, and Air), the actual cargo weight in KGs and then other required information such as name, phone number, address etc. The program then displays results as shown in the sample output file.

Hint: You should study the sample runs (output) of the program to identify for yourself what is required.

Input validation

The user has to enter **Nat** (Upper case or lower), or **Int** (Upper case or lower) for shipment scope, or **Exit** (Upper case or lower) for exiting from the program. Then, user will enter **R or r (for Road freight), S or s (for Sea freight), A or a (for Air freight).** Please note that Road freight is not available for international cargo while Sea freight is not available for national cargo as shown in the given Table 1 as well as in the sample input/output file.
Next, the user will enter the remaining information.

1. If the user inputs a word that is not recognized (NOT **Nat, Int** or **Exit**) for shipment scope, then the program displays "*Wrong Selection of shipment scope!* ", and exits.
2. If the user inputs a character that is not recognized (NOT from **R**, **r, S, s, A, or a**) for freight type, then the program displays "*Wrong Selection of freight type!* ", and exits.
3. If the user inputs incorrect values for other information, the program displays "*Sorry! Wrong input!*", and exits.
4. You have to check the **entered information** with the corresponding requirements according to the data mentioned in the given Table 1.
5. In case of International Sea freight, more than 10000KG will be automatically shipped as container. One container can hold a maximum of 25000KG. The system will automatically calculate the number of required containers as per entered weight.
6. The program output should be similar to the one shown below. You should strictly make sure your output is 100% identical to the given output.

Example on how to calculate the cost based on scope and freight type:

- **Example 1:** Suppose a customer wish to ship 29.3 KG parcel to other country via Air freight.
  Shipment Cost = Weight x Rate
  Total Shipment Cost = Shipment Cost + Tax on Shipment Cost + Insurance Fee
  Total Shipment Cost = (29.3 x 12.5) + 23.81 + 50 = **440 SAR**
  (**Note**: The total shipment cost is ***rounded***)

- **Example 2:** Suppose a customer wish to ship 170 KG parcel to other city within same country via Road freight.
  Shipment Cost = Weight x Rate
  Total Shipment Cost = Shipment Cost + Tax on Shipment Cost + Insurance Fee
  Total Shipment Cost = (170 x 2.5) + 21.25 + 15 = **461 SAR**

- **Example 3:** Suppose a customer wish to ship 148 KG of luggage to other country via Sea freight.
  Total Shipment Cost = Shipment Cost + Tax on Shipment Cost + Insurance Fee
  Total Shipment Cost = (148 x 4) + 38.48 + 50 = **680 SAR**

- **Example 4:** Suppose a company wish to ship 65 ton of luggage to other country via Sea freight.
  Total Shipment Cost = (Shipment Cost + Tax on Shipment Cost + Insurance Fee) x No. of container(s)
  Total Shipment Cost = (6250 + 500 + 450) x 3 = **21600 SAR**
  (**Note:** The system will calculate the number of required containers. One container can hold maximum of 25000KG.)

Table 1: Red sea Logistics' Rates of Shipping Costs

Scope	Weight (in KGs)	Cost in Riyals				
		Road Freight	Sea Freight	Air Freight	Tax	Insurance/piece
National	1– 5	10.0	NA	16	5% of shipment cost	8
	>5 – 10	8.5		13.5		
	>10 – 50	5.5		10.5		
	> 50	2.5		NA		15
International	1 – 100	NA	5.5	12.5	6.5% of shipment cost	50
	> 100 - 10000		4	NA		
	>10000 *Container (Maximum 25 tons per container)*		6250/ container		8% of shipment cost/ conatiner	450/ container

Note: you can use statement `System.exit(0);` to exit from the program

Grading Details

Your program will be graded upon the following criteria:

1) Adhering to the implementation specifications listed on this write-up.
2) Your algorithmic design.
3) Correctness.
4) Your program should include a header comment with the following information: your name, **email**, course number, section number, assignment title, and date.
5) Your program should look EXACTLY like the sample run given in this PDF.
6) The grade distribution-(**Main Menu 5% - Input and Input Validation 20% - each Option (Int or Nat) 30% - Output 15%)**

Deliverables

You should submit one `Java file containing the Java code.`

NOTE: your name, ID, section number AND EMAIL should be included as comments in all files!

Suggestions:

- Read the documented THROUGHLY BEFORE starting the program!
- Next, make your algorithm, pseudo code, and flowchart. (do not submit these)
- Once the solution is 100% clear to you, then begin making your code.

Hope this helps.

Final suggestion: START EARLY!