General Instructions

1. Upload all your exercises to SVN repository.
2. Follow coding standards & naming conventions for all the exercises.
3. Add comments and loggers wherever required.

Core Java Exercises

Scenario: JavaPetShop

Java Language Basics
Conditional statements:

1. Calculate the discount applicable for "JavaPetshop" customers

a) if the customer is a Premium member then 20% discount is applicable on total bill value.
b) if the customer is a Gold member then 15% discount is applicable on total bill value.
c) if the customer is a Silver member then 10% discount is applicable on total bill value.
d) for all other customers the discount will be 5% of their total bill valued over 2000.

2. Implement the following logic to select the mode of transport for dispatching Pet animals from our "JavaPetshop" (DO NOT use logical operators)

a) If priority is not urgent and the weight is less than or equal to 5 Kg, dispatch by Bike.
b) If priority is not urgent and the weight is more than 5 Kg, select a lorry if the distance is less than or equal to 250 Km.
c) If the priority is urgent and distance is less than 50 Km and weight is less than 100 Kg, select a van
d) In all other cases, use a train

3. Segregate an integer array to prime and non-prime array

4.Simulate linear search in an integer array

String & functions:

5. Write a function validateEmail to validate the customers email ID which satisfy the below conditions

```
boolean validateEmail(String email){
        ....
        ....
}
```

a) Email id should not start with '.' and '@'
b) Email id should end with either 'm' or 'n'
c) Email id should have '@' only once
d) Should have '.' after '@' but not immediately
e) '_' should come before '@' symbol
f) Length should be minimum 10 maximum 30

6. Identify Function prototype for the following requirements.
a) Online shopping

b) E-ticket application
c) Fund transfer application
d) Mobile Recharge application

7. Create a function that takes the generated SMS as input and does the following validation
   a) Length of the sentence should not exceed maximum of 100 characters.
   b) Sentence should have at-least one comma.
   c) Sentence should not have dot in between.
   d) Should not start and end with spaces
   e) should end with dot

Classes & Object
OOPS

8. Represent the JavaPetStore as a Class and provide its state and behaviors as follows.

   a) Create a class named Pet with the member variables petID, type, DOB, price, quantity. Generate getters & setters and constructors for all the member variables. Create an object for Pet class and assign values through setter methods and print the values in the console using getters.

   b) Create a class PetStore with the member variables storeID,name,address and an array of Pet. Generate necessary constructors and getters & setters.

   c) Prepare an interface IStoreServiceProvider which has the following methods.

```
public Pet searchPet(int petID);

public Pet[ ] availablePets();

public boolean updatePetDetails(Pet updatedPet);

public boolean sellPet(int petID,int quantity);
```

   Perform necessary validations before implementing CRUD operation methods.

9. Identify the class names for the following apps:
   a) UBER App
   b) Amazon App
   c) IRCTC App
   d) Swiggy App
   e) Eportal App

10.Pick class names from the given list

Excellent
Lazy
status
age
transferMoney
productId
HTCGloabalservices
mobilenumber
Ram
sleep
fast
eating

Exception Handling:
throw, throws, try, catch & finally

11. Prepare UserDefined Exception classes to handle the exceptions in JavaPetStore.

a) Introduce an UserDefined exception class PetNotFoundException, alter the IStoreServiceProvider to incorporate this exception.

b) Introduce another exception class InsufficientPetException to handle insufficient quantity.

Collections:
List, Set & Map

12.Implement Has-Arelation with the given scenario, store has pets (use list , set , maps)

Regular expressions

13. Redo Question #5 & #7 with Regular expressions.

Input/Output Stream:
File Handling

14. Prepare a log configuration with Log4j or Util logger to log the error messages and to track the application process in a log file.

15. **Consider an employee (excel file / libre office) and segregate them with respect to gender in 2 different files)**

16. Consider an employee file and count the number of employees who works for a parameterized department

JDBC: (Read the connection properties from a file **)**
Use PreparedStatement, CallableStatement

17. Simulate LOAD and UNLOAD operation on employee entity

Before Load operation, the data should be validated and invalid data should be written to rejection file

Validations to be considered

a) Salary should be positive
b) Gender should be either male or female (use ENUM)

Maintain separate counters for read and write operation, log the same in a log file