ISLAMIC UNIVERSITY OF TECHNOLOGY

SWE 4302

LAB 4 GROUP A

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Contents

Today's will related to the theory content. You will try to implement and apply the open/close principle and factory method. This lab's objectives,

1. Applying Open/close principle

2. Creating factory method/class

3. Using ploymorphism to replace the conditionals

1 TASKS

Modified Bank Statements Analyzer Requirements

Remember the scenario from Lab 1 where you had a meeting with a person called Tom Sawyer who gave you the requirements to make a *Bank Statement Analyzer*. Recently, you had another meeting with Tom. Previously, he wanted the analyzer to read from a comma-separated values (CSV) formatted file. But now, he has changed the requirements and requested that the application should also be able to read from JSON and XML file.

Here is a sample of JSON formatted bank transactions:

```
[
  {
    "date": "30-01-2017",
    "amount": -100,
    "description": "Deliveroo"
  },
  {
    "date": "30-01-2017",
    "amount": -50,
    "description": "Tesco"
  },
  {
    "date": "01-02-2017",
    "amount": 6000,
    "description": "Salary"
  }
]
```

Here is a sample of XML formatted bank transactions:

```
<transactions>
  <transaction>
    <date>30-01-2017</date>
    <amount>-100</amount>
    <description>Deliveroo</description>
  </transaction>
  <transaction>
    <date>30-01-2017</date>
    <amount>-50</amount>
    <description>Tesco</description>
  </transaction>
  <transaction>
    <date>01-02-2017</date>
    <amount>6000</amount>
    <description>Salary</description>
  </transaction>
  <transaction>
    <date>02-02-2017</date>
    <amount>2000</amount>
<description>Royalties</description>
  </transaction>
<transactions>
```

He wants you to modify the application according to his latest requirements. Also, the program should answer his previous queries the same as before:

- What is the total profit and loss from a list of bank statements? Is it positive or negative?

- How many bank transactions are there in a particular month?

- What are his top-10 expenses?

- Which category does he spend most of his money on?

For Bonus marks, You are asked to write at least 10 test cases that will pass and verify your application.

You may use your previous code and refactor it or write the code all over again.