**Software Testing**

**HOMEWORK**

**HW#02: DOMAIN TESTING**

1. **General Information**

|  |  |
| --- | --- |
| Exercise ID: | HW#02 |
| Duration: | 3 hours |
| Deadline: | (please see the submission link) |
| Form: | Personal Homework |
| Submission: | Moodle |
| Lecturer:  TA: | Lam Quang Vu  Ho Tuan Thanh |
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1. **Outcomes**

* Applying Domain Testing Technique to design test cases for real-case example

1. **Description**

## MobiCard

Prepaid MobiCard is a mobile service to help customers connect Mobifone network for mobile communication. The customer who has a mobile phone after getting a Mobifone SIM Card and fill in the balance can use the service.

There is 2 ways to recharge the MobiCard account:

**1. Recharge MobiCard account using Scratch Card**

**Method:**  Press **\*100\*Card Number#**

Finish by **OK** to send the charging message

Card Number is a string of 12 digits. Each scratch card has an expiry date. After this expiry date, the Card Number becomes invalid.

There are many cards with different denominations:

|  |  |  |
| --- | --- | --- |
| **Denomination** | **Usage period** | **Standby Recharge period** |
| VND 50,000 | 12 days | 10 days |
| VND 100,000 | 30 days | 10 days |
| VND 200,000 | 70 days | 10 days |
| VND 300,000 | 115 days | 10 days |
| VND 500,000 | 215 days | 10 days |

**2. Recharge MobiCard Account via SMS VnTopup**

The customer must have a bank account with SMS@Banking Service is activated.

**Method:** Write a message with following syntax: **NAP PRODUCT\_CODE**

Send to **8049**

There are many product codes with different denominations:

|  |  |  |  |
| --- | --- | --- | --- |
| **Product Code** | **Denomination** | **Usage period** | **Standby Recharge period** |
| VN10 | VND 10,000 | 2 days | 1 day |
| VN20 | VND 20,000 | 4 days | 2 days |
| VN30 | VND 30,000 | 7 days | 2 days |
| VN50 | VND 50,000 | 12 days | 10 days |
| VN100 | VND 100,000 | 30 days | 10 days |
| VN200 | VND 200,000 | 70 days | 10 days |
| VN300 | VND 300,000 | 115 days | 10 days |
| VN500 | VND 500,000 | 215 days | 10 days |

**Effective from January 1st 2006**

**Usage period** is the period in which your account has enough credit to make and receive calls/messages. Usage period will be added to expiry date of the account after recharged.

**Standby Recharge period** is the period that you can only receive incoming calls/messages after your balance credit is empty or your account is expiration of usage (1-way lock). Standby Recharge period is not cumulative.

After standby recharge period, if the customer does not recharge, his account will be locked 2-ways.

The time limit for 2-ways lock is 30 days. After 2-ways lock expiration, if the customer does not recharge, his account will be withdrawn.

**Requirements:** Apply the **domain testing technique** to design test cases for the 2 methods of recharging MobiCard account above.

## Calculate the personal income tax (Vietnam)

**Requirements:**

+ Write a software to calculate PIT or use excel to check this <https://luatvietnam.vn/tinh-thue-thu-nhap-ca-nhan.html>.

+ Apply the **domain testing technique** to design test cases for this function

+ Design Test Cases

Read section 1,2,3,4 in this page: <https://luatvietnam.vn/thue-phi/cach-tinh-thue-thu-nhap-ca-nhan-2020-565-23087-article.html>

Please see the slide **EN.DOMAIN TESTING - UC Analysis.ppt** for presentation template.

1. **Submission regulations**

* Filename: **Domain Testing\_StudentID.docx** or pdf(Ex: Domain Testing\_9912022.docx)
* At the end of your report, you should include your self-assessment (see the template at the end of this document)
* Submit your report to Moodle
* Deadline: see the submission link

1. **Assessment**

The exercise is evaluated through the following criteria:

1. Student shows his understanding by following up the steps/templates in domain testing technique.
2. Student can identify input and output variables from the specification.
3. For equivalence analysis, there should be at least 1 valid equivalence class and 1 invalid equivalence class for each variable.
4. The test cases should have specific test data with good assumptions.
5. Student should complete designing test cases for both 2 cases of recharging and show the differences between the 2 cases.
6. Must have a software to calculate PIT
7. Student should complete designing test cases for PIT function.
8. **References**

* <http://www.mobifone.com.vn/portal1/vn/products/mobicard.jsp>
* <https://www.mobifone.com.vn/portal/vn/sanpham/goicuoc/thoainhieu/mobicard_ct.jsp>
* <https://eximbank.com.vn/Home/Static/nganhangdientu_vntopup.aspx>
* <http://ketoanthienung.com/cach-tinh-thue-thu-nhap-ca-nhan.htm>

1. **Other regulations**

Late submission is not permitted.

1. **Self-Assessment Template**

Self-Assessment Report

|  |  |  |  |
| --- | --- | --- | --- |
| **Criteria** | **Outcomes (Brief description about what you get/trouble from each requirement)** | **Grade** | **Self-Assessment Grade** |
| 1 | … | 2 | … |
| 2 | … | 2 | … |
| 3 |  | 2 |  |
| 4 |  | 2 |  |
| 5 |  | 2 |  |
|  | **Total** | 10 | … |