**Higher Diploma in Information Technology**

**Database Management Systems**

**Year 1 Semester 2 – 2021**

**Worksheet 06- Practice Test 01**

Consider the following relational schemas of Customer and Product with reference to *'Gold' Supermarket* database.

Customer (CusID, Name, City, Age, NIC, Email)

Product (ProductID, ProductName, Unitprice, Quantity, Category)

Following are the instances of Customer and Product relations.

**Customer**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| CusID | Name | City | Age | NIC | Email |
| 100 | Kamal | Galle | 25 | 191447852V | kamal@yahoo.com |
| 101 | Janani | Matara | 22 | 191444552V | janai@gamil.com |
| 102 | Namal | Colombo | 24 | 191747852V | nam1@gmail.com |
| 105 | Jayantha | Kandy | 20 | 201852852V | jayan@hotmail.com |
| 107 | Janith | Gampaha | 29 | 202144782V | janith@yahoo.com |
| 110 | Amali | Kandy | 30 | 199614478V | ama@gmail.com |
| 115 | Kusal | Colombo | 34 | 199847742V | kusa@hotmail.com |
| 117 | Piyal | Jaffna | 28 | 200144442V | piya@gmail.com |

**Product**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ProductID | ProductName | Unitprice | Quantity | Category |
| P1 | Chais | 100 | 100 | A |
| P3 | Chang | 150 | 200 | B |
| P4 | Aniseed Syrup | 250 | 1000 | C |
| P7 | Queso Cabrales | 120 | 500 | B |
| P8 | Genen Shouyu | 400 | 250 | B |
| P10 | Vegie-spread | 300 | 1500 | A |

1. Create the above two relations Product and Customer using suitable data types with the following constraints.
   * Primary key constraints
   * Ensure that all Customers and Products have a name (the fields cannot be null values).
   * Ensure that the customer’s NIC number contains the format as follows:

**ninedigits followed by V**

201852852V

* + Ensure that a customer’s age is more than 18.
  + Ensure that e-mail address of a customer is unique.
  + Unit price of the product should be a non-negative number.

1. Insert the given data to the Tables.
2. Modify the Product relation and add a new column ‘SupplierID’ to store the supplier ID of a product. Use appropriate data type.
3. Update the SupplierID column as follows:

**Product**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ProductID | ProductName | Unitprice | Quantity | Category | SupID |
| P1 | Chais | 100 | 100 | A | 1 |
| P3 | Chang | 150 | 200 | B | 1 |
| P4 | Aniseed Syrup | 250 | 1000 | C | 2 |
| P7 | Queso Cabrales | 120 | 500 | B | 1 |
| P8 | Genen Shouyu | 400 | 250 | B | 3 |
| P10 | Vegie-Spread | 300 | 1500 | A | 3 |

1. Answer the following questions.

**Section A**

1. List all customers’ details.
2. Select the ProductID, ProductName and category of all the products.
3. List the unique cities.
4. Find names of the customers who are older than 25 years.
5. Find the details of customers whose names starts with ‘S’
6. Find the details of customers whose names contains ‘mal’. (anywhere in the name)
7. Find the details of customers whose city starts with any character and followed by ‘andy’
8. List all customers who have an e-mail address that ends with ‘gmail.com’
9. List all customers who are from a city starting with ‘M’ or ’K’
10. Find the details of customers whose city does not starts with ‘G’ or ‘K’.
11. List the details of the products those name starts with character between A and C.
12. List all customers who are from ‘Kandy’, ‘Galle’ or ‘Colombo.
13. List the customer number and name of customers who are from Kandy and the e-mail address ends with ‘hotmail.com’
14. List details of products of those with a price between 50 and 100.
15. List the details of the customers whose age is not between 25 and 30.

**Section B**

1. Find the average price of all products.
2. Count the number of products in the product table.
3. Count the number of unique addresses in the Customer table.
4. What is the maximum price of products which are supplied by supplier 1?
5. Display Customer ID, Customer name and city. Sort the output in the ascending order of customer name.
6. List the number of customers from each city. Sort the output in the descending order of city.
7. List the category and number of products from each category.
8. What is the maximum price of products in each category? Display the category and maximum price.
9. What is the average price of products in each category? Round off the average value to one decimal place.
10. List the suppliers who supply products more than 1000 in total.
11. List the suppliers who are supplying more than one product. Sort the output in the descending order of number of products.