DATA STRUCTURE PROJECT

DS Pharmacy System

PROJECTIDEA AND AIMS..

STRUCTURING APHARMACY DATASTORING SYSTEMTHATCONTAINS TWOEMPLOYEES THE FIRST IS THEPHARMACIST ,AND THE SECOND IS THEASSISTANTWHO HELPSCUSTOMERS TOCHOOSE PRODUCTS FORM SEVERAL SECTIONSBEAUTY,CARE, MEDICAL SUPPLIES,MEDICATIONS
EACH SECTION HAS SPECIFICPRODUCTS.

main

```java
lic class ProjectDS {

    /**
     * This the main of our DS pharmacy
     *
     * @param args the command line arguments
     * @author Danah Alramadani, Sarah Alqufi, Haneen Almalki, Sara Alfaifi, Tala Aqeel
     * @version 1
     * @since 1
     */
    public static void main(String[] args) {
        //Array of sections in the pharmacy
        String[] sections = {"Beauty", "Care", "Medical Supplies", "Medications"};
        //Array of products in each section
        String[] beautySection = {"Dakeup", "Aails products", "Bair dye", "Cyes lenses"};
        String[] careSection = {"Products for body", "Products for skin care", "Products for hair", "Makeup removers"};
        String[] medicalSuppliesSection = {"First aid materials", "Wheel chairs", "Measuring devices", "Hot&Cold Bags"};
        String[] medicationsSection = {"Prescribed medications", "Non-Prescribed medications", "Sore throat Candies", "Vitamins"};

        //employees objs
        Employees employee1 = new Employees( name: "Omar Ahmad",  ID: 1112234560,  job: "Pharmacist",  gender: 'M');
        Employees employee2 = new Employees( name: "Anas Turki",  ID: 1113325406,  job: "Assistant",  gender: 'M');

        //Printing DS pharmacy components
        System.out.println( x: "____________________________________________[Welcome to DS pharmacy]____________________________________________\n");
        System.out.println( x: "Here is a list of our provided products and their sections: \n");

        System.out.println( x: "~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~");
        System.out.println("Sections: " + sections[0] + ", " + sections[1] + ", " + sections[2] + ", " + sections[3] + ". |");

        System.out.println( x: "~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~");
        System.out.println("Beauty Section has: " + beautySection[0] + ", " + beautySection[1] + ", " + beautySection[2] + ", " + beautySection[3] + ".|\n");
        System.out.println("Care Section has: " + careSection[0] + ", " + careSection[1] + ", " + careSection[2] + ", " + careSection[3] + ". |\n");
        System.out.println("Medical Supplies Section has: " + medicalSuppliesSection[0] + ", " + medicalSuppliesSection[1] + ", " + medicalSuppliesSection[2] + ", "
                + medicalSuppliesSection[3] + ".|\n");
        System.out.println("Medications Section has: " + medicationsSection[0] + ", " + medicationsSection[1] + ", " + medicationsSection[2] + ", "
                + medicationsSection[3] + ".|");
        System.out.println( x: "~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~\n");

        System.out.println("Our " + employee1.job + " \"" + employee1.name + "\" AND our " + employee2.job + " \"" + employee2.name + "\" will be happy to serve you!~");
```

class Employees

```java
public class Employees {

    //Employees Infos
    String name;
    long ID;
    char gender;
    String job;

    //default constructor to create objects.

    /**
     *
     */
    public Employees() {
    }

    /**
     * Constructor to assign values for the employee information
     *
     * @param name the name of the employee who serving the customer.
     * @param ID the ID of the employee who serving the customer.
     * @param job The job of the employee who serves the customer.
     * @param gender the Gender of the employee who serving the customer.
     */
    public Employees(String name, long ID, String job, char gender) {
        this.name = name;
        this.ID = ID;
        this.gender = gender;
        this.job = job;
    }

}//End class
```

main

```
System.out.println( x: "\n_____[Implementing sort & search]_____\n");

//Implementing insertion sort  algorithm
System.out.println( x: " ~~~~~~~~~~~~~~~");
System.out.println( x: "|insertion sort|");
System.out.println( x: " ~~~~~~~~~~~~~~~");

System.out.println( x: "~The sections array after sorting: ");
Product.insertionSort( products: sections);
System.out.println( x: "\n~The Beauty Section array after sorting: ");
Product.insertionSort( products: beautySection);
System.out.println( x: "\n~The careSection array after sort: ");
Product.insertionSort( products: careSection);
System.out.println( x: "\n~The medicalSuppliesSection array after sorting: ");
Product.insertionSort( products: medicalSuppliesSection);
System.out.println( x: "\n~The medicationsSection array after sort: ");
Product.insertionSort( products: medicationsSection);
System.out.println( x: "_____\n");

//Implementing binary search algorithm
System.out.println( x: " ~~~~~~~~~~~~~~~");
System.out.println( x: "| binary search |");
System.out.println( x: " ~~~~~~~~~~~~~~~");
System.out.println( x: "if exist shows the index, -1 if not");

System.out.println( x: "\n~Search for \"Snacks\" section: "); //Do we have a snacks section? in which index?
System.out.println( x: Product.bSearch( products: sections,  searchKey: "Snacks"));
System.out.println( x: "~Search for \"Nails products\" in Beauty section: "); //Do we have nail products? in which index?
System.out.println( x: Product.bSearch( products: beautySection,  searchKey: "Nails products"));
System.out.println( x: "~Search for \"Products for fitness\" in careSection: ");
System.out.println( x: Product.bSearch( products: careSection,  searchKey: "Products for fitness")); //Do we have products for fitness? in which index?
System.out.println( x: "~Search for \"First aid materials\" in Medical supplies section: "); //Do we have First aid materials? in which index?
System.out.println( x: Product.bSearch( products: medicalSuppliesSection,  searchKey: "First aid materials"));
System.out.println( x: "~Search for Non-Prescribed medications in Medications section: "); //Do we have non-Prescribed medications? in which index?
System.out.println( x: Product.bSearch( products: medicationsSection,  searchKey: "Non-Prescribed medications"));
```

```
    System.out.println( x: "_____\n");
    Product s = new Product();
    System.out.println( x: "If you bought from beautySection");
    System.out.println( x: s.details( x: "beautySection"));
    System.out.println( x: "\nIf you bought from careSection");
    System.out.println( x: s.details( x: "careSection"));
    System.out.println( x: "\nIf you bought from medicalSuppliesSection");
    System.out.println( x: s.details( x: "medicalSuppliesSection"));
    System.out.println( x: "\nIf you bought from medicationsSection");
    System.out.println( x: s.details( x: "medicationsSection"));

}//End of main
End class
```

class Product

```java
public class Product {

    //Products infos
    String end_date;
    double price;

    //default constructor to creacte type of product obj.
    public Product() {
    }

    /**
     * Constructor to assign values for the Products information
     *
     * @param end_date the Product Expiry Date .
     * @param price the Product Price .
     */
    public Product(String end_date, double price) {
        this.end_date = end_date;
        this.price = price;
    }

    // @param end_date Setters to set the products values depending on the type of product
    public String details(String ex) {

        switch (ex) {
            case "beautySection":
                return this.end_date = "The expiry will be from 6-12 months after openning the package";

            case "careSection":
                return this.end_date = "The expiry will be from 4-6 months after openning the package";

            case "medicalSuppliesSection":
                return this.end_date = "The expiry will be from 12-24 months after openning the package";

            case "medicationsSection":
                return this.end_date = "The expiry will be from 12-24 months after openning the package";


        }//End switch
        return"null" ;
    }//End method
```

class Product

```java
//@param products[] Insertion sort implemention on products array.

public static void insertionSort(String products[]) {
    String temp;
    int i, j, k;
    for (i = 1; i < products.length; i++) {
        temp = products[i]; //st
        for (j = 0; j < i; j++) {
            if (products[j].compareTo( anotherString: temp) > 0) { // >0 products[j] First
                break;
            }
        }
        for (k = i; k > j; k--) {
            products[k] = products[k - 1];
        }
        products[j] = temp;
    }
    for (i = 0; i < products.length; i++) {

        System.out.println(products[i]);
    }
}//End method

//Binary search
public static int bSearch(String products[], String searchKey) {

    int left = 0, right = products.length - 1;
    while (left <= right) {
        int mid = (left + right) / 2;
        if (products[mid].compareTo( anotherString: searchKey) == 0) {
            return mid;
        } else {
            if (products[mid].compareTo( anotherString: searchKey) < 0) {
                left = mid + 1;
            } else {
                right = mid - 1;
            }
        }
    }
    return -1;

}//End methodSs
}// end class
```

Output

```
run:
_______________________________________[Welcome to DS pharmacy]_______________________________________

Here is a list of our provided products and their sections:

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Sections: Beauty, Care, Medical Supplies, Medications. |
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Beauty Section has: Dakeup, Aails products, Bair dye, Cyes lenses.|

Care Section has: Products for body, Products for skin care, Products for hair, Makeup removers. |

Medical Supplies Section has: First aid materials, Wheel chairs, Measuring devices, Hot&Cold Bags.|

Medications Section has: Prescribed medications, Non-Prescribed medications, Sore throat Candies, Vitamins.|
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Our Pharmacist "Omar Ahmad" AND our Assistant "Anas Turki" will be happy to serve you!~

_____________________________________[Implementing sort & search]_____________________________________

 ~~~~~~~~~~~~~~
|insertion sort|
 ~~~~~~~~~~~~~~
~The sections array after sorting:
Beauty
Care
Medical Supplies
Medications

~The Beauty Section array after sorting:
Aails products
Bair dye
Cyes lenses
Dakeup

~The careSection array after sort:
Makeup removers
Products for body
Products for hair
Products for skin care
```

Output

```
~The medicalSuppliesSection array after sorting:
First aid materials
Hot&Cold Bags
Measuring devices
Wheel chairs

~The medicationsSection array after sort:
Non-Prescribed medications
Prescribed medications
Sore throat Candies
Vitamins
_____________________________

 ~~~~~~~~~~~~~~
| binary search |
 ~~~~~~~~~~~~~~
if exist shows the index, -1 if not

~Search for "Snacks" section:
-1
~Search for "Nails products" in Beauty section:
-1
~Search for "Products for fitness" in careSection:
-1
~Search for "First aid materials" in Medical supplies section:
0
~Search for Non-Prescribed medications in Medications section:
0
_____________________________

If you bought from beautySection
The expiry will be from 6-12 months after openning the package

If you bought from careSection
The expiry will be from 4-6 months after openning the package

If you bought from medicalSuppliesSection
The expiry will be from 12-24 months after openning the package

If you bought from medicationsSection
The expiry will be from 12-24 months after openning the package
BUILD SUCCESSFUL (total time: 0 seconds)
```

سارة الفيفي .. 443002606
حنين المالكي .. 443016595
سارة العوفي .. 443006431
دانة الرمضاني .. 442013346
تالة عقيل .. 442013216

Presented to: Dr. Manal Al-Harbi
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