Smart Menu Report

- Course: Cs 210
- Section: 815 and 1375
- By:

Shajan Mokyel (221410469)

Norah Alrubayan(220410543)

Shog Alhargan (220410521)

High-Level Solution

Step 1 : Ask User to input Maximum Capacity (MC),Current Customer(CC) and Staff Shortage (SS).

Step 2: if (Staff shortage is equal to 0 (No) or 1 (Yes))

Then SS equals 0 or 1

Else

Print “Error! for Staff shortage please enter a value of 0(No) or 1 (yes): " until the user input is 1 or 0

Step 3: if (Current Customer is greater than Maximum Capacity)

Then Print "Error! number of customers cannot be larger than capacity" until the user input CC less than or equal to MC

Else

Save MC and CC input values

Step 4: Open an existing text file with a menu written in it.

Step 5 : Read the text file line by line until no more lines are left.

Step 6 : Divide each line to words and save each word to the appropriate category

Price , Name, availability , amount prepped and type

Step 7 : Save the category values in a list.

Step 8 : Change the price according to some conditions

- If SS equals 0 and if the CC is greater than 50% of MC

Then change the prices depending on the type:

If type F then price equals (CC divided by MC) multiplied to price and then added to original price value

If type R then price equals the original price multiplied by 0.25

If type L then do not change price

If type D then print “No complementary drinks ,but free refills!”

- if SS equals 0 and if the CC is less than or equal 50% of MC

If type F then price won’t change

If type R then price equals the original price subtract the price multiplied by 0.2

If type L then price equals the original price subtract the price multiplied by 0.5

- if SS equals 1 then we will not subtract from R and L and they will go back to original price

Step 9 : we will write the new prices in a new text file

Step 10 : Save and Close the text file

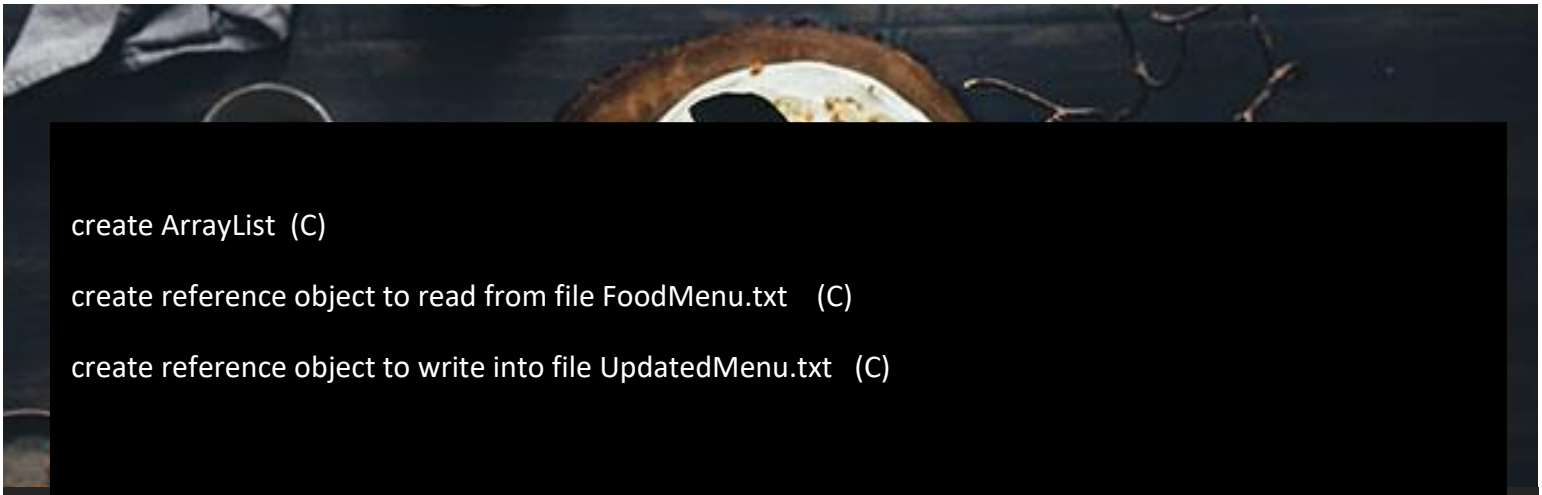
Step 11 : print "Enter (1) to see the current menu items information or (0) to end program: "

If (1) is entered then print the list that contains the categories

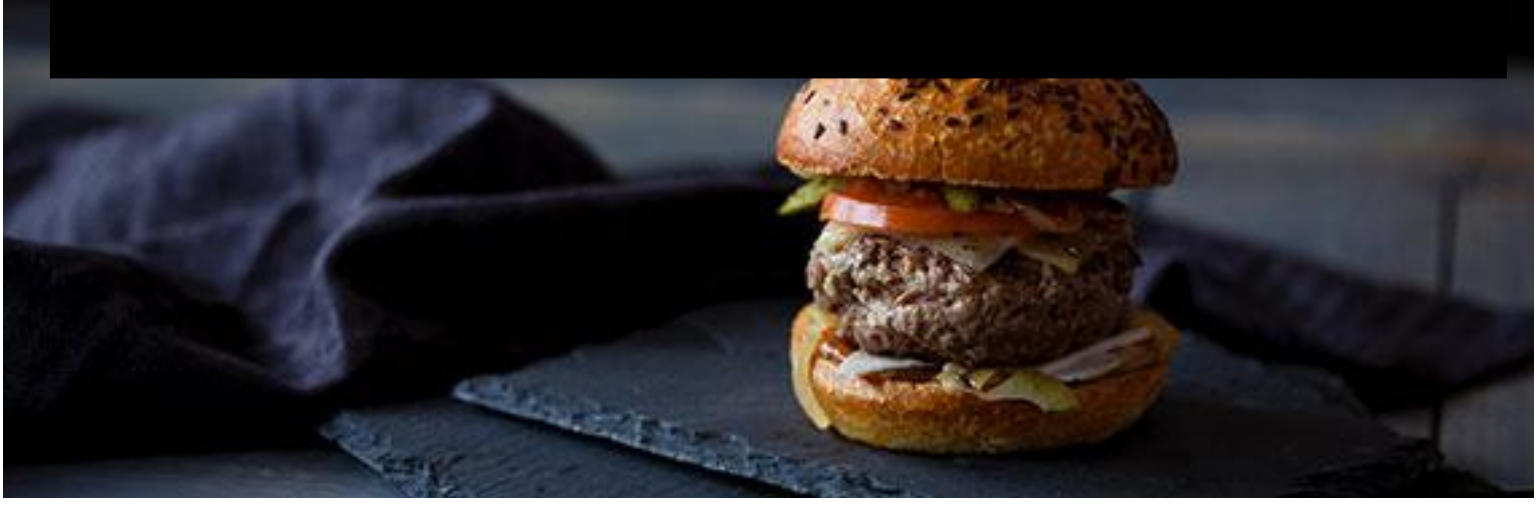
Else do nothing.

Algorithm

```
Algorithm Main(Array Of String)
longStart<-0  (C)
longEnd<-0    (C)
print "Please enter 0(no) or 1 (yes) : Is there a staff shortage?"   (C)
read shortage   (C)

loop shortage not equal 1 and shortage not equal 0 do  C + (C*N)
 print "Error, for staff shortage Please enter 0(no) or 1 (yes) "   (C*N)
 read shortage  (C*N)
end loop   (C)

print "Enter maximum capacity"   (C)
read capacity   (C)
print "Enter current number of customers"   (C)
read customers   (C)

loop capacity<customers do   C +(C*N)
 print "Error, number of customers can not be larger than capacity"   (C*N)
 print "please re-enter the number of custoemrs"   (C*N)
 read customers   (C*N)

end loop   (C)
```



```
create ArrayList  (C)
create reference object to read from file FoodMenu.txt    (C)
create reference object to write into file UpdatedMenu.txt   (C)

start<- find current time   (C)
loop not end of file FoodMenu.txt do   C +(C*N)
 x<-read line from file   (C*N)
 name<- use substring to take name from read line (C*N)
 price<- use substring to take price from read line (C*N)
 prepared<- use substring to take price from read line (C*N)
 available<- use substring to take price from read line (C*N)
 item_type<- use substring to take price from read line (C*N)
 create MenuItem  Object From Class Menu  (C*N)
 Add MenuItem Object into ArrayList (C*N)
 end loop (C)

 end<- find current time  (C)
 print "time to read and store the array is "  (C)
 print end-start   (C)
```



```
// Start the pricing process
strat<- find currnt time   (C)
if capacity*0.5 < customers then  (C)
          if item_type= 'F' then   (C)
           price= price+ price*customers/capacity   (C)
           print price   (C)
else
          if item_type= 'R' then   (C)
           price= price+ price*0.25   (C)
else
           if item_type= 'L' then  (C)
           nothing to change in price
          else
          if item_type= 'D' then   (C)
           print "refill is free"   (C)
end if
end if
end if
end if
```

```
else
if capacity*0.5>=customers then   (C)
   if item_type= 'F' then   (C)
            nothing to change in price

else
            if item_type= 'R' then   (C)
             if shortage=0 then   (C)
                price= price- price*0.2    (C)

else
            if item_type= 'L' then   (C)
              price= price- price*0.5   (C)
            end if
            end if
           end if
           end if
           end if
end<- find current time   (C)
 print "time to process data is  "    (C)
 print end-start   (C)

End Algorithm Main
```

Analysis For Time Efficiency

Calculate all the time periods for all statements as follow:

T(N)= 39*C + 15 * (C * N)

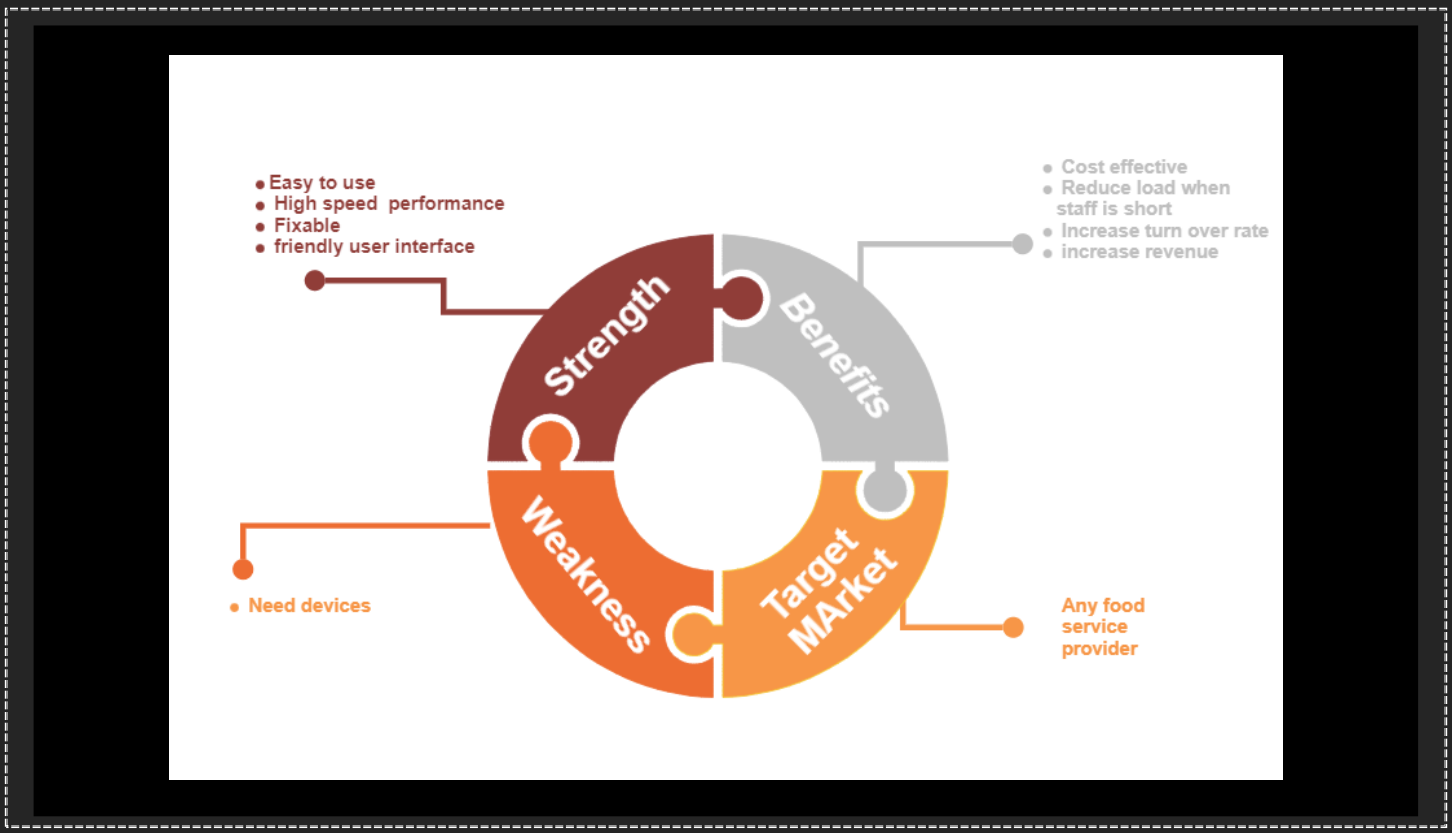
Cancel the constants

T(N)= C + C * N

T(N)= N

Big-O Notation Is: O(N)

The Algorithm Contains Non Nested Linear Loops...


Easy to use
High speed performance
Fixable
friendly user interface
Cost effective
Reduce load when staff is short
Increase turn over rate
increase revenue
Strength
Benefits
Weakness
Target MArket
Need devices
Any food service provider

JAVA PROGRAM

- Read the data from Food Menu.txt.

```
// opening file
 File Refrence_Menu = new File ("C:/Users/shaja/Downloads/FoodMenu.txt");
 File Customer_Menu = new File ("C:/Users/shaja/Downloads/UpdatedMenu.txt");

 //reading the file
 Scanner search = new Scanner (Refrence_Menu);

 // Declaring Menu variables
 String item_name="";
 double item_price=0;
  int amount_prepped,amount_available;
  char item_type=' ';


try (PrintWriter Update=new PrintWriter(Customer_Menu)){

   // Start reading run time
Start=System.nanoTime();

 while (search.hasNext()){
```

JAVA PROGRAM

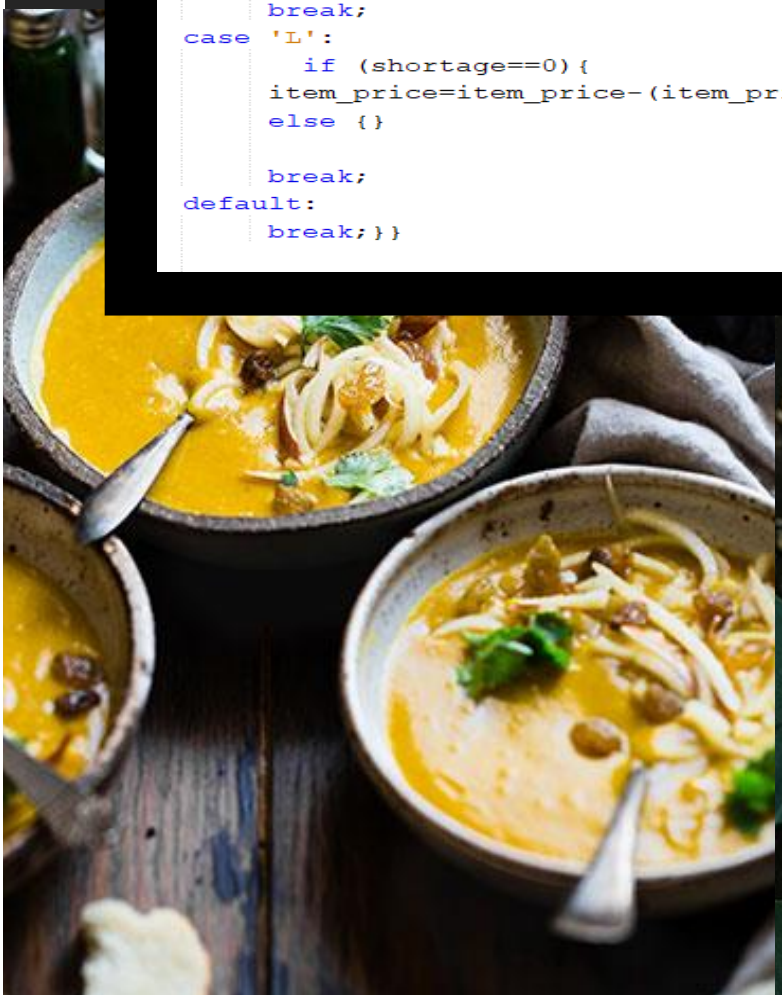
- Search txt file and save item in list

```
while (search.hasNext()){
String x = search.nextLine();
 item_name= x.substring(0, x.indexOf(','));
String t = x.replace(item_name+',',"");

String P = t.substring(t.indexOf(" "), t.indexOf(','));
item_price = Double.parseDouble(P);
String t2 = t.replace(P+',', "");

String P2 = t2.substring(t2.indexOf(" "), t2.indexOf(','));
 amount_prepped = Integer.parseInt(P2.trim());
String t3 = t2.replace(P2+',', "");

String P3 = t3.substring(t3.indexOf(" "), t3.indexOf(','));
amount_available = Integer.parseInt(P3.trim());
String t4 = t3.replace(P3+',',"");

 String P4 =t4.substring(t4.indexOf(" ") );
 item_type= P4.charAt(1);

Menu items = new Menu(item_name,item_price,amount_prepped,amount_available,item_type);
MENU.add(items);} // End of while
```

JAVA PROGRAM

- Reprice

```
 if (capacity*0.5<customers){
  switch (item_type) {
case 'F':
item_price=item_price + item_price*customers/capacity;
System.out.println(item_price);
     break;
case 'R':
 item_price=item_price+(item_price*0.25);
     break;
case 'L':
     break;
case 'D':
 Update.println("No cumplamintry drinks but , Refills are free!");
     break;
 default:
     break;}}

 else if (capacity*0.5>=customers){
switch (item_type) {
 case 'F':
     break;
case 'R':
     if (shortage==0){
     item_price=item_price-(item_price*0.2);}
     else {}
     break;
case 'L':
       if (shortage==0){
     item_price=item_price-(item_price*0.5);}
     else {}

     break;
default:
     break;}}
```



JAVA PROGRAM

- User input

```
   //Asking user for input
 Scanner input = new Scanner (System.in);

 System.out.println("Please enter 0 (no) or 1 (yes) : Is there a staff shortage ?");
 int shortage= input.nextInt();
   //checking condition
 while (shortage!=0&&shortage!=1){
 System.out.println("Error! for Staff shortage please eneter a value of 0(No) or 1 (yes): ");
 shortage= input.nextInt();}

 System.out.println("Please enter Maximum capacity: ");
 int capacity= input.nextInt();

 System.out.println("Please enter current number of customers");
 int customers= input.nextInt();
  //checking condition
while (capacity<customers){
 System.out.println("Error! number of customers can not be larger than capacity");
 System.out.println("Please re-enter number of customers: ");
 customers= input.nextInt();}
```

JAVA PROGRAM

- Saving the new menu

```
Update.println("- "+item_name+" Price: " + item_price+" SAR");
Update.println();
Update.close();  }
```

JAVA CLOCK

Output

CS210project1 (run) #11 × CS210project1 (run) #3 × CS210project1 (run) #23 × CS210project1 (run) #24 × CS210project1 (run) #25 × CS210project1 (run) #29 ×

```
ant -f C:\\Users\\shaja\\OneDrive\\Documents\\NetBeansProjects\\CS210project1 -Dnb.internal.action.name=run run
init:
Deleting: C:\Users\shaja\OneDrive\Documents\NetBeansProjects\CS210project1\build\built-jar.properties
deps-jar:
Updating property file: C:\Users\shaja\OneDrive\Documents\NetBeansProjects\CS210project1\build\built-jar.properties
compile:
run:
Please enter 0 (no) or 1 (yes) : Is there a staff shortage ?
0
Please enter Maximum capacity:
100
Please enter current number of customers
50
 The run time to read and store in the array list is: 4.2478637990422E13 Seconds
The run time to reprice is: 4.2478645942722E13 Seconds
 The run time to write in output file is: 4.2478652904822E13 Seconds
Enter (1) to see the current menu items information or (0) to end program:
```

REFRENCES

- https://www.geeksforgeeks.org/convert-string-to-double-in-java/
- https://stackoverflow.com/questions/10630892/java-numberformatexception-in-converting-string-to-integer
- https://www.w3schools.com/java/java_ref_string.asp
- java.time.Clock Class in Java - GeeksforGeeks
- Cs 101 and 101 lectures
- https://mkyong.com/java/java-how-to-convert-system-nanotime-to-seconds/#:~:text=We%20can%20just%20divide%20the,SECONDS.
- ALGORITHMS AND FLOWCHARTS (uomustansiriyah.edu.iq)