

# Get Smart: With Java Programming



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```
System.out.println("WELCOME TO THIS COURSE\n");
```

# LECTURE 7



# Random Numbers

# Repetition Statements

--- For Loop ---

# Branching statements

--- Break ---

--- Continue ---

Problem Solving



# LOOPS

## Counter Controlled Loop

Definite repetition

- 1) The user will enter the number of iterations (N) Entries
- 2) The number of iterations are predefined  
e.g. (50) Entries
- 3) The loop has a range from (x) to (y)  
e.g. Range from (5) to (30)



## Condition Controlled Loop

Indefinite repetition

- When the number of iterations are unknown
- Loop obtains data in each iteration
- The user will enter a dummy value to end  
e.g. (Enter (-1) to end)  
e.g. (Enter ('e') to end)

Q) How can the program determine when to stop?

A) One way to solve this problem is to use a special (distinct) value called a sentinel value (also called a signal value, a dummy value, or a flag value) to indicate “end of data entry”

# LOOPS



## Counter Controlled Loop

Number of iterations are known before entering the loop

We will need

- 1) Initial value
- 2) A condition that tests for the final value
- 3) **increment** (or decrement) by which the control variable is modified each time through the loop (to make the condition false after many iterations)

## Condition Controlled Loop

Number of iterations are unknown before entering the loop

We will need a dummy value to end the loop  
(A distinct value from other regular values)

The loop includes a statement that obtains data

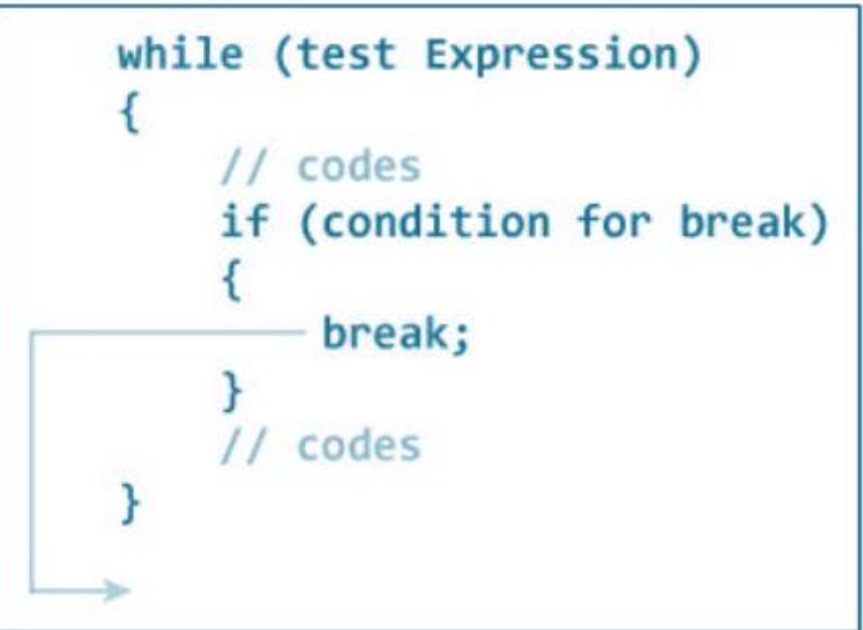
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OR we can use the **break;** statement  
The loop includes a condition



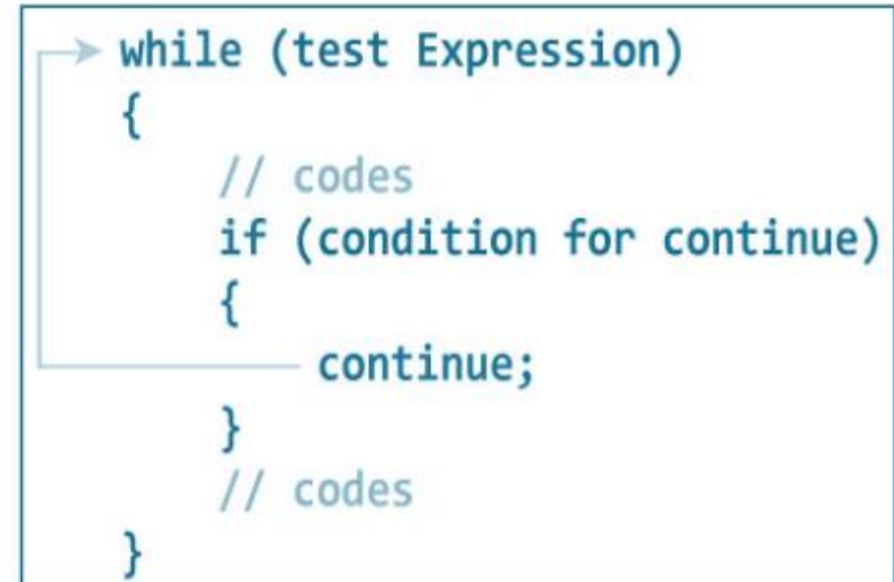
## ➤ 'break' Statement

- Used inside the body of a loop statement or after a 'case' in a 'switch' statement
- Causes immediate exit from the loop or switch
- We use it when we want to exit early from the loop, by inserting it inside a condition statement
- Mostly used to exit after a 'flag value' is found



## ➤ 'continue' Statement

- Used inside the body of a loop statement
- Skips any statement after it within the loop and jumps back to the first line in the block of code in the loop
- Mostly used to skip the code in special cases, for example if we want to skip the code after a negative number [ if(n<0) continue; ]



# ANSWER PERCENTAGE

- Number of people who answered "A"
- Number of people who answered "B"
- Number of people who answered "C"
- Number of people who answered "D"





# Random Numbers

- Random Student Selector
- Random Password Generator



- Lottery (Lot applications)
- Video game (different events)

Random number generators have applications in statistical sampling, computer simulation, cryptography, completely randomized design



# Random Numbers



First create an instance of “Random” class and then invoke methods such as `nextInt()`, `nextDouble()`, etc using that instance.

We can pass arguments to the methods for placing an upper bound on the range of the numbers to be generated. For example, `nextInt(6)` will generate numbers in the range 0 to 5 both inclusive.

```
// create instance of Random class
Random rand = new Random();

// Generate random integers in range 0 to --
//(max - min) + 1
int rand_int1 = rand.nextInt(20) ;
int rand_int2 = rand.nextInt(10);

// Print random integers
System.out.println("Random Integers: "+rand_int1);
System.out.println("Random Integers: "+rand_int2);

// Generate Random doubles
double rand_dub1 = rand.nextDouble();
double rand_dub2 = rand.nextDouble();

// Print random doubles
System.out.println("Random Doubles: "+rand_dub1);
System.out.println("Random Doubles: "+rand_dub2);
```



# Random Student Selector



## No Hands

### Random Student Selector

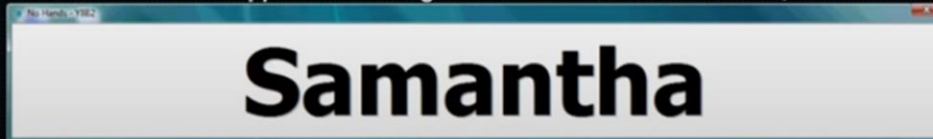
#### What Is 'No Hands'?

'No Hands' random student selector is a small windows utility that randomly selects a Name from a class list. It is based on the idea that by randomly selecting pupils to answer questions, students feel more comfortable in answering teachers questions, and *all* students are more attentive as anyone in the class may be asked the next question.

In practice, students love this quick and fair way of student selection, and teachers can never be accused of favouritism or picking on a student too frequently.

'No Hands' is particularly suited to use with a smart-board as the application can be loaded with many class lists (consisting of a list of names and times when the class is taught) positioned and locked on the smart-board. Then whenever you need to select a pupil, run the application and a student for the current class will be selected. Click again and another student will be picked. You can optionally lock the utility to the screen so that the little darlings don't close it when your back is turned, and you can make it sit on-top of your other windows. There is also a manual override for the automatic class selection.

Screen shots of the application running in 'Normal' and 'Locked' mode;



'No Hands' is a proven solution to a common classroom problem found in both primary and secondary schools. The utility already has an ever expanding user base, and I know from my own experience, that it is a great teaching tool to have in any classroom. Hope you like :)

# Exercises

- Generate a random integer between 100 and 999 which is divisible by 5
  - Generate a 6 digit random code
  - Pick a random character from a given String
- Calculate multiplication of two random double numbers



# Average of all entries

$$\text{average} = \text{sum of all entries} / \text{number of entries}$$

How to calculate the average?

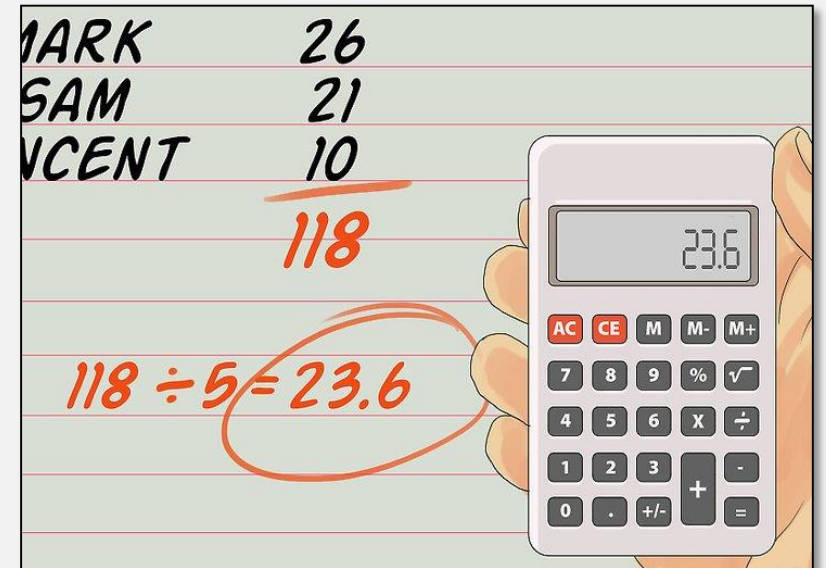
Step 1 → Start collecting values one at the time (using a input statement)

Step 2 → Add all values together using "sum" or "total"

Step 3 → Divide the output of Step 2 with total number of entries (after exiting the loop and collecting all values)

Step 4 → Display the output of Step 3

- Sum is calculated inside the loop
- Number of entries are either:
  - 1) Given & Known ( N or any integer value)
  - 2) Unknown before execution(We will need to add a counter after each entry to find the number of entries)



***"Education is incomplete if you are not aware of coding ...  
Coding teaches you how to think!!!"***



**Display Prime Numbers Between two Intervals**

**Display Uppercased A to Z using for loop**

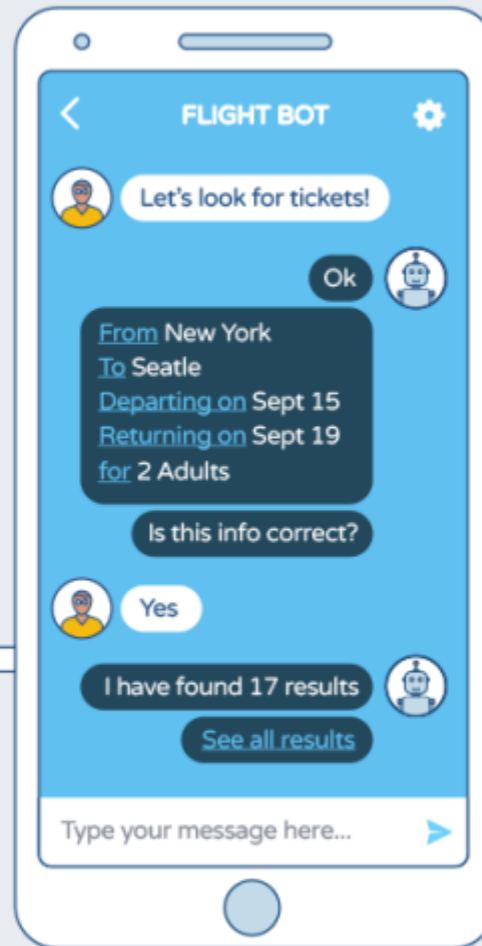
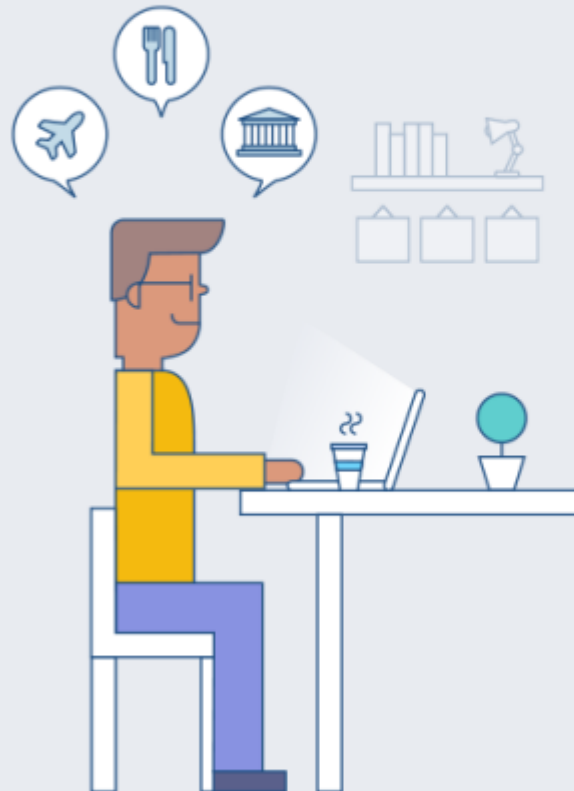
**Display Lowercased a to z using for loop**

**Example: Factors of a Positive Integer**

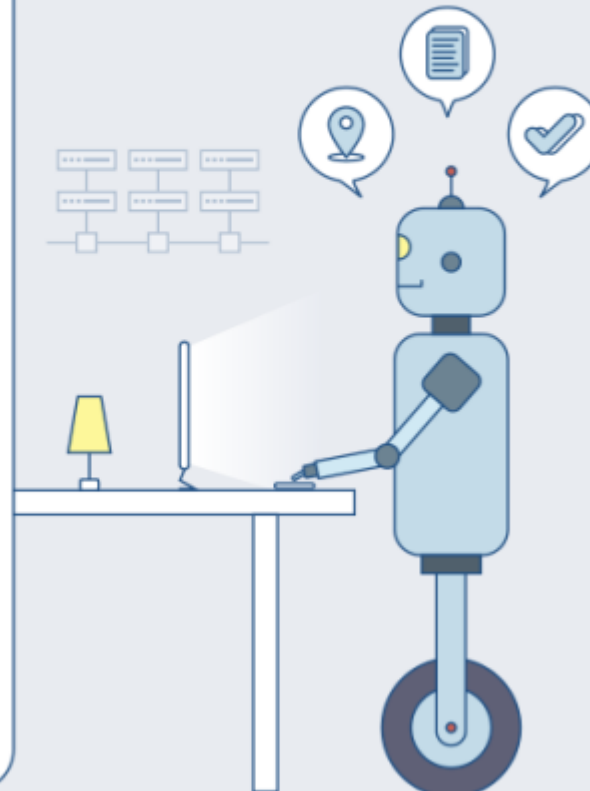
**Generate Multiplication Table using for loop**

# Build a simple chatbot

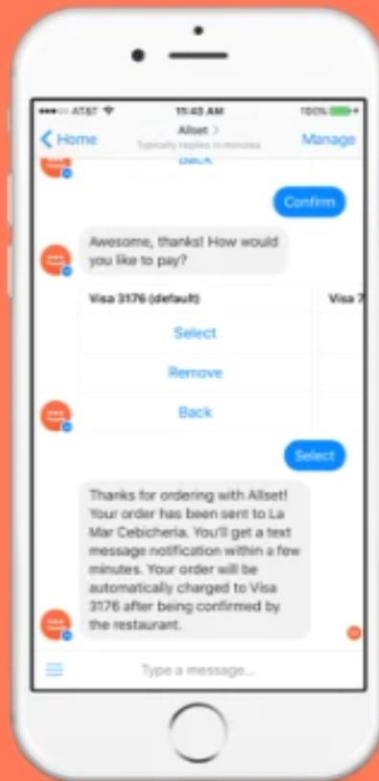
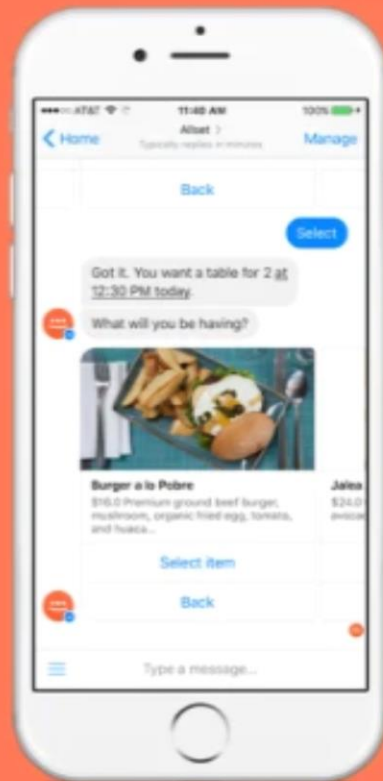
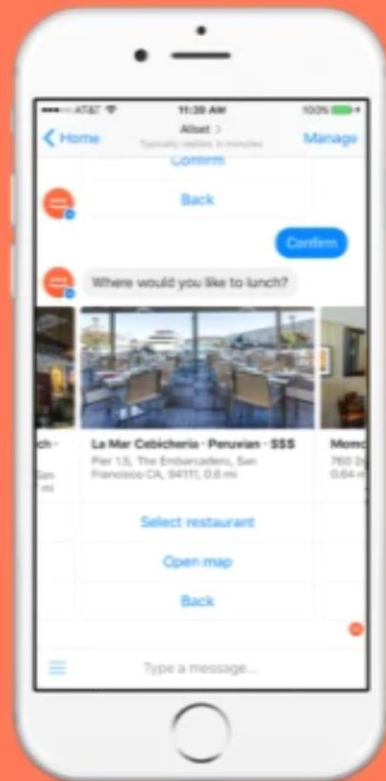
What kind of food do you sell here?  
What is your website?  
What is your location  
Do you have any jobs?



Indian, Chinese, Arabic  
cyberdeal.vision  
Amamn, Jordan  
No







## Restaurant Ordering Bot

\$495

A bot on which customers can browse menu, order and send feedback

- ☐ 7 Days Delivery
- ☐ API Integration
- ☐ 40 Conversation Steps
- ☐ Conversation Script
- ☐ Flow Design
- ☐ 2 Messaging Platforms

**Continue (\$495)**

[Compare Packages](#)

[Contact Seller](#)



### Enhance Existing Chatbot

\$995

I will do Enhance Features of existing Chatbot or can Fix any kind of issue.

🕒 29 Days Delivery 🔄 1 Revision

- ✓ API Integration
- ✓ Conversation Script
- ✓ Flow Design
- ✓ Action Plan

[Continue \(\\$995\)](#)

[Compare Packages](#)

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# Build a simple chatbot

Hello Yaman, How can we help you today?

- What kind of food do you sell here?
- What is your website?
- What is your location
- Do you have any jobs?

\* Indian food

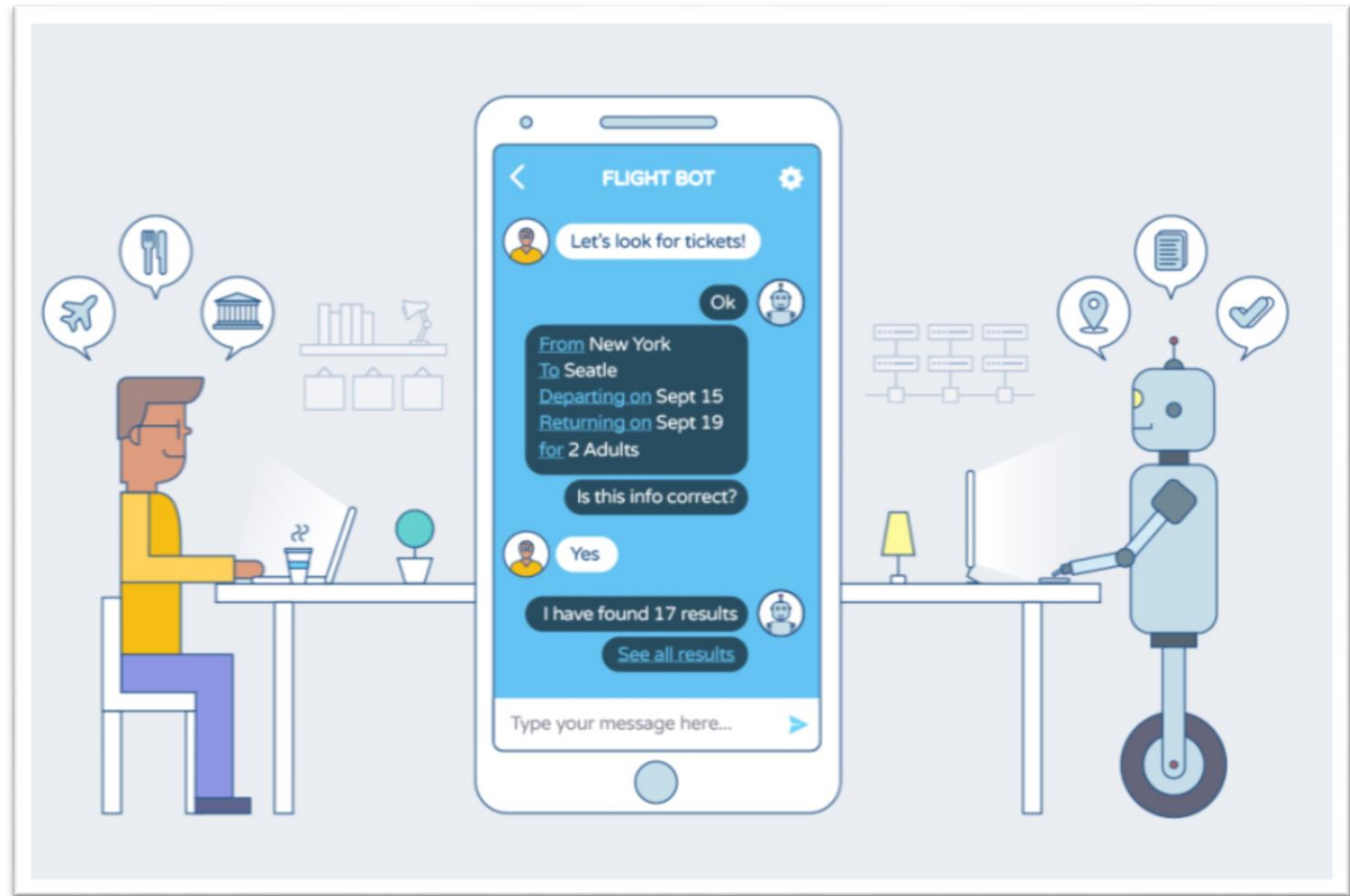
- Chicken Tikka (4 JD's)
- Butter Chicken (4.5 JD's)
- Biryani (5 JD's)

\* Arabic Food

- Mansaf
- Kabseh
- Mlokhya

Cyberdeal.vision

Amman, Jordan



**Challenge:**

Program a simple chat-bot for any sector you like  
(health, restaurants, sports, business, TV, travel)

Basically the user can ask for help, and the program will answer his questions



# CHALLENGE:

## FIND THE SECOND LARGEST NUMBER

{ MAX & SECOND MAX }

## { MAX & SECOND MAX }

```
printf( "Enter next number: " ); /* prompt for next number */
scanf( "%d", &number );

/* if current number is greater than largest */
if ( number > largest ) {

    /* update second largest with previous largest */
    secondLargest = largest;

    /* update largest with current number */
    largest = number;
} /* end if */
else {

    /* if number is between secondLargest and largest */
    if ( number > secondLargest ) {
        secondLargest = number;
    } /* end if */

} /* end else */
```

# Restaurant System

## Display the following statistics for a Restaurant:

- The total number of served Soft Drinks
- The total number of served Sandwiches
- The total sales for the restaurant
- The average cost per order
- The maximum and minimum order cost
- Number of orders with cost above average
- The number of orders with no Soft Drinks
- Number of orders
- Send an auto E-mail on Wednesday

