CLASS LIST NUMBER	**FACULTY**: INFORMATION & COMMUNICATION TECHNOLOGY **DEPARTMENT**: COMPUTER SCIENCE **SUBJECT**: Principles of Programming and Introduction to Programming (Java) PPA115D &TRO115D	**CT4**

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Web Test 4 Duration: 1 hour 00 minutes Date: 22 May 2023 Total: 25 Pages: 4	Examiner Miss V.M. BOOI

Student number								

Initials	Surname		%
Campus	Group	Lecturer	Venue/PC# _____/____

Instructions

- When you are done, follow the instructions on how to upload. ***If you do not submit your files on EC, you will NOT be supplied with the opportunity to write a sick test or any supplementary test.***
- Save your work frequently.
- This is a closed book test. **NO** additional resources, like the Internet or EC may be used for help. **You may NOT use any flash sticks during the test.**
- Add your name as a comment to the top and the bottom of your files.
- Please note that **marks will be subtracted** if proper coding conventions are not utilised. (e.g. Indentation, vertical spacing between methods, placement of braces, variable names, etc…) A maximum of five marks can be deducted if coding conventions is not followed.
- Signature.

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Signature

Question 1 **[25]**

ABC bakery is a bakery store that bakes cakes, bread and cookies. They want to have a system in place that will help them to package their cookies better. Below is the information given to you as a developer to help to assist develop this application.
A box of cookies can hold **24** cookies, and a container can hold **75** boxes.

The program must do the following:

- Prompt the user to enter the total number of cookies. If the number of cookies entered is equal to zero the program must terminate (**See Figure 1.1**).

```
============Cookie Boxes and Container============
Enter the total number of cookies or zero to exit:0

==========The END ============================
```

Figure 1.1

- The program must then calculate the number of boxes, number of containers, left over cookies and left over boxes.
- The program must then display the number of boxes, number of containers, left over cookies and left over boxes as indicated in **Figure 1.2- Figure 1.3**.

```
============Cookie Boxes and Container============
Enter the total number of cookies or zero to exit:950

The number of cookie boxes needed to hold 950 cookies = 39
The number of containers needed to store the cookie in boxes: 1
Leftover cookies: 14
Leftover boxes: 39
```

Figure 1.2

```
============Cookie Boxes and Container============
Enter the total number of cookies or zero to exit:950

The number of cookie boxes needed to hold 950 cookies = 39
The number of containers needed to store the cookie in boxes: 1
Leftover cookies: 14
Leftover boxes: 39
Enter the total number of cookies or zero to exit:
5000
The number of cookie boxes needed to hold 5000 cookies = 208
The number of containers needed to store the cookie in boxes: 2
Leftover cookies: 8
Leftover boxes: 58
```

Figure 1.3

- Note that each box must contain the specified number of cookies, and each container must contain the specified number of boxes.
- If the number of containers is a zero, there must be a container assigned to store the boxes.
- If the last box of cookies contains less than the number of specified cookies, the number of leftover cookies must be displayed.
- Similarly, if the last container contains less than the number of specified boxes you can display the number of leftover boxes.
- The program must terminate if a zero is entered by the user.

2.1 Develop a Java application class **CookiesApp** and save this in a file called **CookiesApp**.java that will help solve the problem statement, using the information above as well as the sample outputs. Consider the following partially completed Java program. Re-write the program and do not change the logic of the program.

```
import A

public class B
{
    public C void main( D )
    {
        // Create an object of the scanner class
        E input = new F
        // Declare constants and variables
        G NUMBER_OF_COOKIES_IN_BOX = H ;
        G CONTAINER_CAPACITY = I ;
        J numberOfCookies, numberOfBoxes,
        numberOfContainers,leftoverCookies, leftoverBoxes;

        System.out.println("=============Cookie Boxes and Container============");

        // Prompt and getting number of cookies
        System.out.print("Enter the total number of cookies or zero to exit:");

        numberOfCookies = K

        while ( L )
        {
            // calculations

            numberOfBoxes = M ;

            leftoverCookies = N ;

            numberOfContainers = O ;

            leftoverBoxes = P ;

            System.out.println("The number of cookie boxes needed to hold " +
                    numberOfCookies + " cookies = " + numberOfBoxes);

            if ( Q )

                numberOfContainers = R ;

            System.out.println("The number of containers needed to store the cookie in boxes: " +
                    numberOfContainers);
```

```
            if (  S                          )
            {
                System.out.println("Leftover cookies: " + leftoverCookies );
            }
            if (  T                          )
            {
                System.out.println("Leftover boxes: " + leftoverBoxes);
            }

            System.out.println("Enter the total number of cookies or zero to exit: ");
            numberOfCookies =  U
        }

        System.out.println("==========The END ============================");
```

**********The End of Class Test 4**********