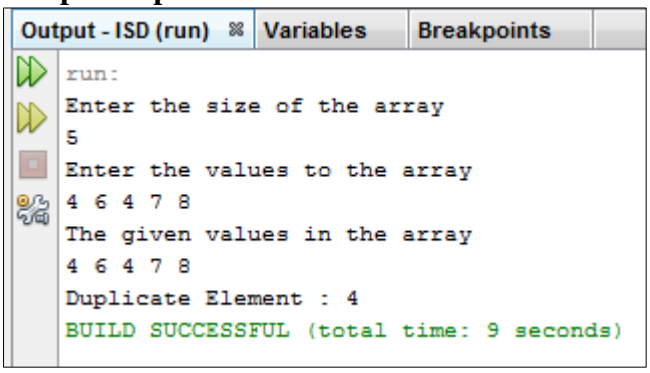
SECTION A
(ANSWER ALL QUESTIONS – THIS SECTION CARRIES 15 MARKS)

Write the java program to solve the following problem.

4	6	4	7	8

Duplicated Element: 4

Sample output:



a. The system displays a message on the screen asking the user to enter the size of the array **(02 Marks)**

b. Create the array and read the list of integer numbers from the keyboard. **(02 Marks)**

c. Display the user entered values on the screen. **(03 Marks)**
Hint: Read the array values and output the values.

d. Find the duplicate values of an array and display the duplicated value on the screen. **(05 Marks)**

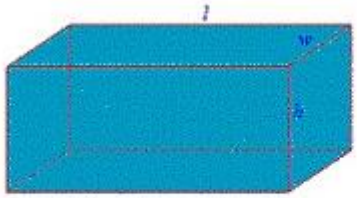
e. Handle the exceptions which can occur. **(03 Marks)**

SECTION B
(ANSWER THE QUESTION – THIS SECTION CARRIES 10 MARKS)

Write a java program which has a method called **findSurface.** This method finds the surface area of a rectangular cuboid. The calculation is done using the formula below.

User is expected to enter the values for lw, hl, hw. Final output should be the area of the surface.

Rectangular Cuboid

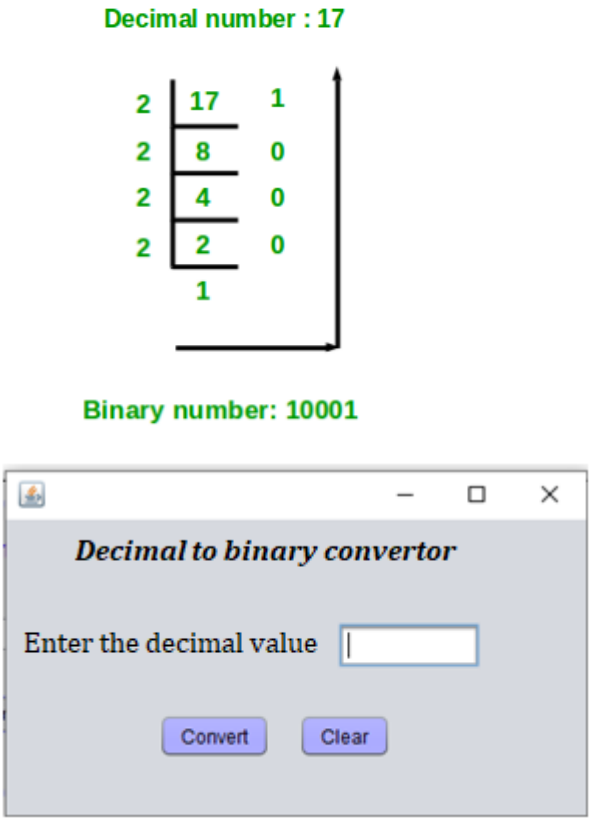


$$Surface\ Area = 2(lw) + 2(hl) + 2(hw)$$

SECTION C
(ANSWER THE QUESTION – THIS SECTION CARRIES 15 MARKS)

You are asked to develop a GUI based application to read a decimal value and convert it into binary and display on a dialog box. You are expected to handle all possible exceptions. The UIs for the application will be as in the figures given below.

Decimal to binary conversion:



Marks distribution:

Correct GUI creation – 3 Marks
Correct Exception handing – 2 Marks
Correct implementation of the logic – 3 Marks
Handling dialog boxes – 2 Marks

SECTION D
(ANSWER THE QUESTION – THIS SECTION CARRIES 10 MARKS)

You are the consultant for a new Sri Lankan startup called Dream Theater. This company collects and publishes movie-related information. They are planning to expand their operations by allowing registered customers to borrow DVDs through their Video shop. The customers later return back the borrowed DVDs.

A registered customer can browse through the list of videos available. The customer next selects the video he/she wishes to borrow. Any number of videos can be requested by the customer and during the Rental Process the status of the DVDs are updated as 'borrowed'. The address of the customer is taken from the Customer data file. These details are added to the Borrowed DVD data file. The customer is finally notified by an email and a printed document that the DVDs were borrowed.

When Dream Theater receives the retuned DVDs the status of the DVDs are updated as 'available'. An entry is made to the Return DVD file and the customer is notified by email and a printed document that the DVDs have been returned.

The customer can also get a list of videos which are directly viewable at the video shop and the customer can select a suitable payment plan for that. Usually the customer pays a fixed payment per month to view a selected number of videos for the given period.

The manager requires weekly reports of the DVD list borrowed by category and fast moving video list.

a) Design the Context Level Data Flow diagram for the above description using Visio. **05Marks**

b) Prepare the Data Dictionary. **02 Marks**

c) Identify the level 0 processes and the possible data stores. **03 Marks**