Title:

Email Application Scenario: You are an IT Support Administrator Specialist at Yanbu University College - YUC. You are charged with the task of creating email accounts for new students.

Objective(s):

- Able to identify a problem from real context.
- Able to propose solution using a suitable OOP Design.
- Demonstrate object-oriented approach-information hiding, encapsulation.
- Codes implementation free from syntax and logical error.
- Demonstrate uniqueness and individual creativity to deliver information.

Problem Analysis:

The project is about to ask the students to enter their First Name, Last Name, Date of Birth, Alternative Email, And department Letter.

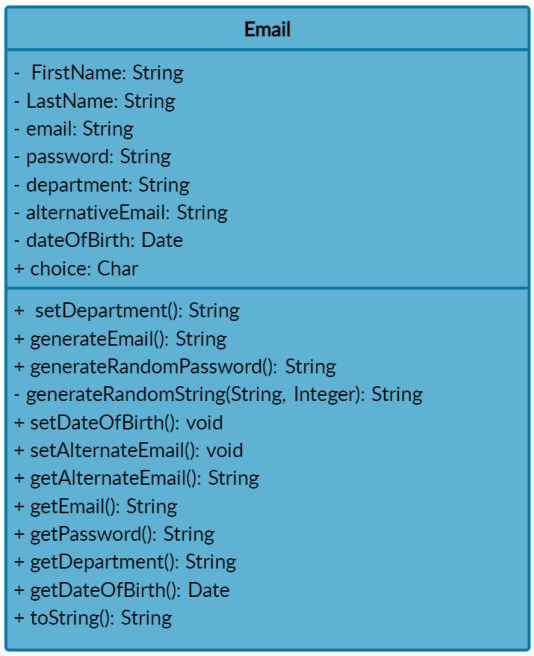
Then create a random password for each one and generate an Email also.

After that, Display all the Students Details.

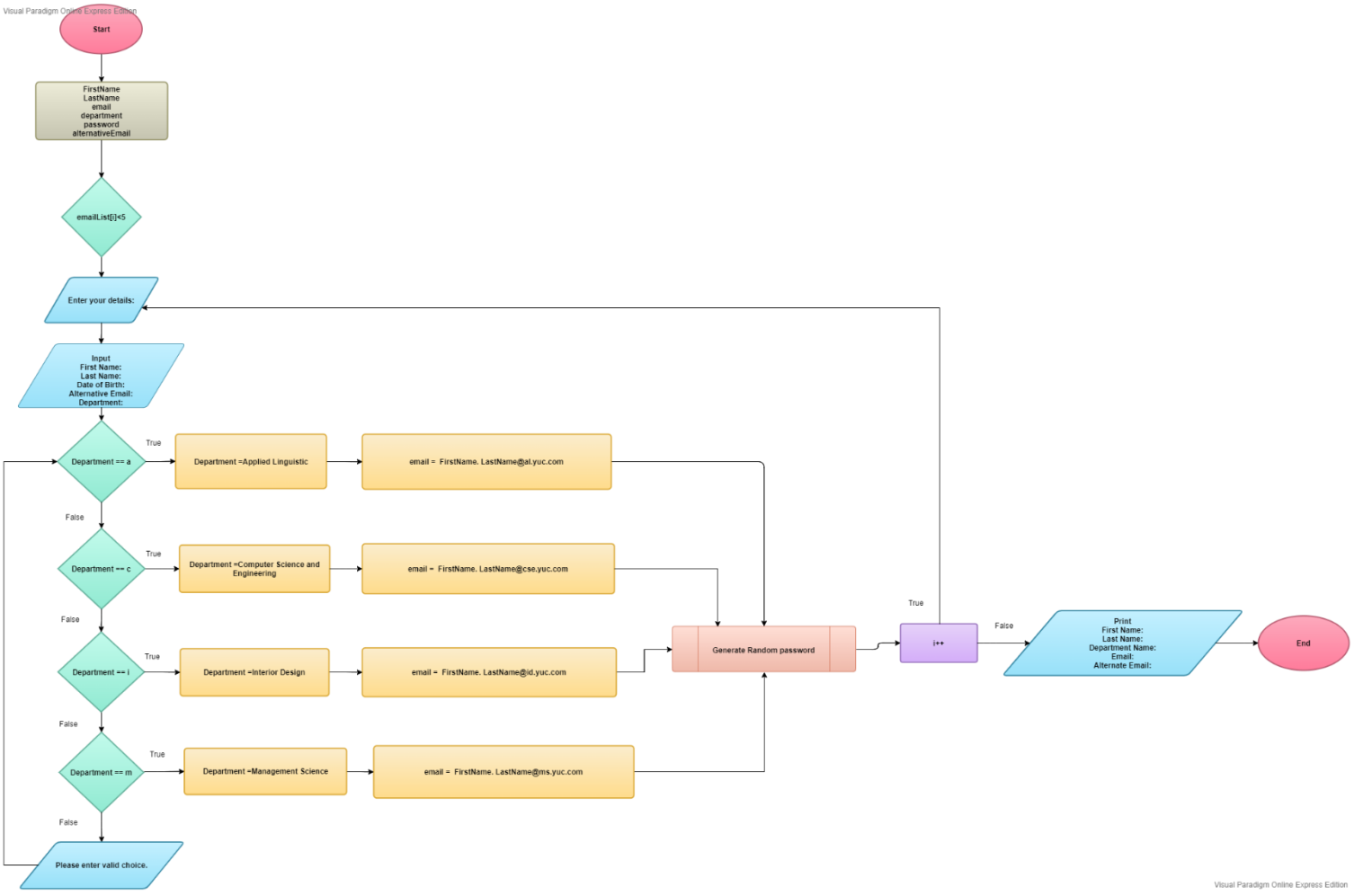
- The input variables shall be: First Name, Last Name, Date of Birth, Alternative Email, And department Letter.
- The output variables shall be: First Name, Last Name, Department Name, Email and Alternative Email.

Attributes	Processing variables/calculations	Operations	Necessary header/files/functions
-FirstName (String) -LastName (String) -email (String) -password(String) -department(String) -alternateEmail(String)	i++ date=year+"/"+month+"/"+day	+setDepartment(String) +generateEmail(String) +generateRandomPassword() (String) -generateRandomString (String) + setDateOfBirth(void) +setAlternateEmail(void) +getAlternateEmail(String) +getEmail(String) +getPassword(String) +getDepartment(String) +getDateOfBirth(Date) +toString(String)	import java.util.* import java.text.* If else statements System.out.println() next() next().charAt(0) nextInt() for loop EmailList[] while loop for enhanced loop

UML Diagram:



Flowchart:



Code:

```
import java.util.*;  // to take input          //Start of Class Email
import java.text.*;
public class Email
{
  //Used in generateRandomPassword()
  private static final Random random = new Random();
  private static final String CharLower = "abcdefghijklmnopqrstuvwxyz";
  private static final String CharUpper = CharLower.toUpperCase();
  private static final String Numbers = "0123456789";
  private static final String SYMBOLS = "@$#";
  /*Attributes*/
  private String FirstName, LastName, email, password, department , alternateEmail ;
  private Date dateOfBirth ;
  // Used take the user department
  char choice;
  /*Constructer*/
  public Email(String FName, String LName){
    FirstName = FName;
    LastName = LName;
    setDateOfBirth();
    setAlternateEmail();
    setDepartment();
    password = generateRandomPassword();
    email = generateEmail();
  }
  /*Methods*/
  public String setDepartment(){  //To ask the user about which department
     while(choice != 'a' && choice != 'c' && choice != 'i' && choice !='m'){
       System.out.println("Choose your department : ");
       System.out.println("a. Applied Linguistic\nc. Computer Science and
Engineering\ni. Interior Design\nm. Management Science");
       Scanner sc = new Scanner(System.in);
```

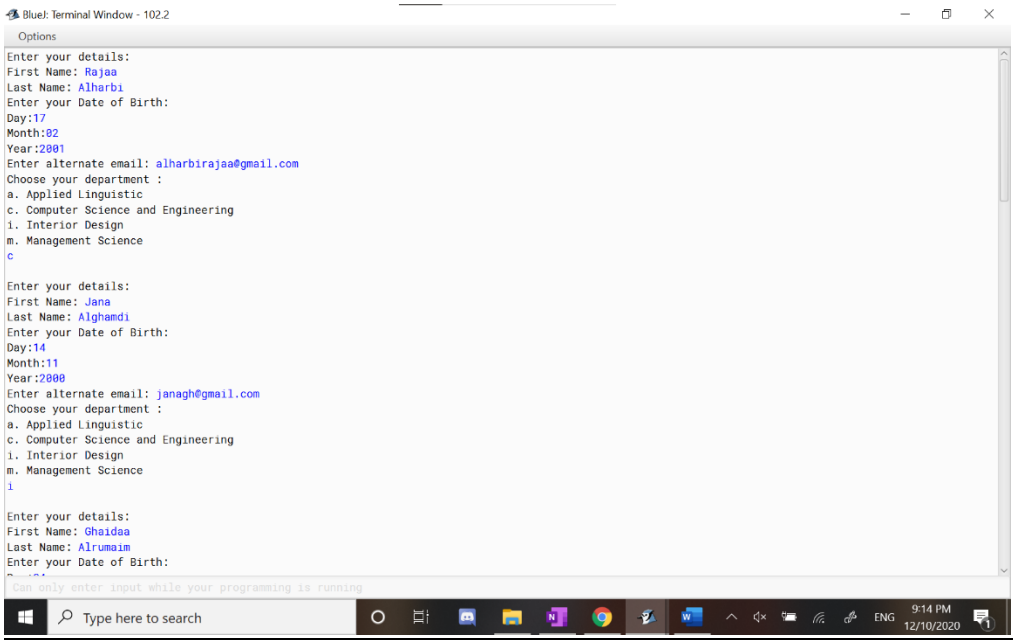
```
        choice = sc.next().charAt(0);
        if (choice == 'a' || choice == 'A')
          return department = "Applied Linguistic";
        else if (choice == 'c' || choice == 'C')
          return department ="Computer Science and Engineering";
        else if (choice == 'i' || choice == 'I')
          return department ="Interior Design";
        else if (choice == 'm' || choice == 'M')
          return department ="Management Science" ;
        else
          System.out.println("Please enter valid choice.");


    } return department; }
   public String generateEmail(){     //create an email for the student based on the
department
       String dep="";
       if(department.equals("Applied Linguistic")) dep = "al";
       else if(department.equals("Computer Science and Engineering")) dep = "cse";
       else if(department.equals("Interior Design")) dep = "id";
       else if(department.equals("Management Science")) dep = "ms";
       return FirstName.toLowerCase() + "." + LastName.toLowerCase() + "@" + dep +
".yuc.com";
   }
   public String generateRandomPassword(){        //Create a random password
       int passLength = 12;
       StringBuilder pass = new StringBuilder(passLength);
       String lowerAlpha = generateRandomString(CharLower, 4);
       String upperAlpha = generateRandomString(CharUpper, 4);
       String numbers = generateRandomString(Numbers, 2);
       String symbols = generateRandomString(SYMBOLS, 2);

pass.append(lowerAlpha).append(upperAlpha).append(numbers).append(symbols);
       List<String> result = Arrays.asList(pass.toString().split(""));
       Collections.shuffle(result);
       return String.join("", result);
```

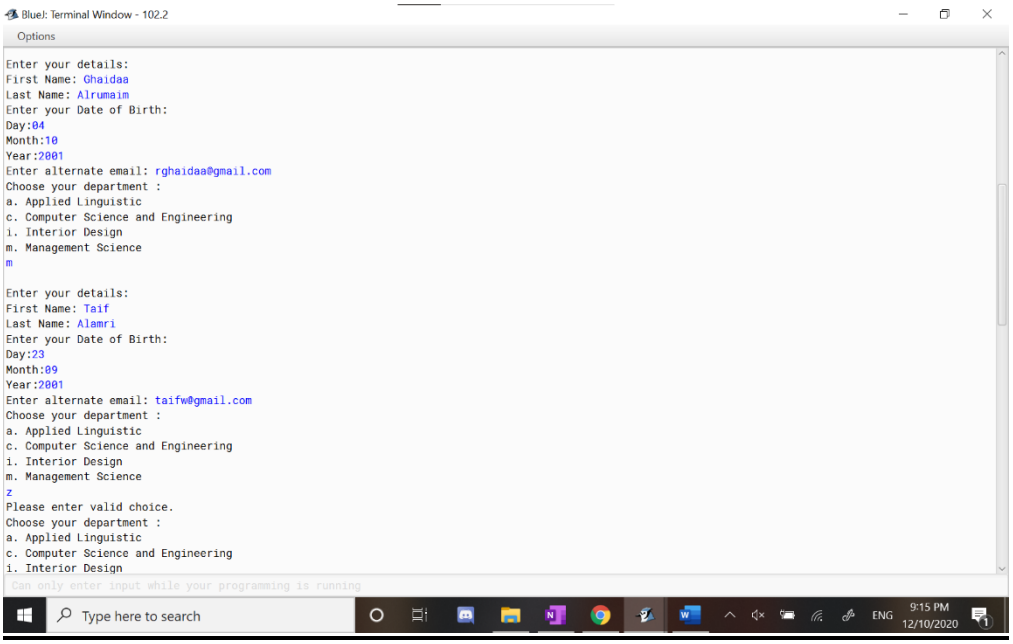
```
    }
    private static String generateRandomString(String input, int size) {
        StringBuilder result = new StringBuilder(size);
        for (int i = 0; i < size; i++) {
            int index = random.nextInt(input.length());
            result.append(input.charAt(index));
        }
        return result.toString();
    }
    public void setDateOfBirth() {  // Take the user Date of birth
        Scanner s = new Scanner(System.in);
        System.out.println("Enter your Date of Birth:");
        System.out.print("Day:");
        int day = s.nextInt();
        System.out.print("Month:");
        int month = s.nextInt();
        System.out.print("Year:");
        int year = s.nextInt();
        String date = year+"/"+month+"/"+day;
        dateOfBirth = new Date(date);
        SimpleDateFormat simpleDateFormat = new SimpleDateFormat("yyyy-MM-
dd");
        simpleDateFormat.format(dateOfBirth);
    }
    public void setAlternateEmail(){    // Take The user alternate email
        Scanner n = new Scanner(System.in);
        System.out.print("Enter alternate email: ");
        alternateEmail = n.next();
    }
    // get methods to all Attributes
    public String getAlternateEmail() {return alternateEmail ;}
    public String getEmail() {return email;}
    public String getPassword() {return password;}
    public String getDepartment () {return department ;}
```

```
  public Date getDateOfBirth() {return dateOfBirth;}
  //@Override - To Display the Details//
  public String toString() {
   return "\nFirst Name : "+FirstName+"\nLast Name : "+LastName+"\nDepartment
Name : "+department+"\nEmail : "+email+"\nAlternate Email : "+alternateEmail ;
  }
}                                   //End of Class Email


import java.util.*;                         //Start of Class EmailApp
public class EmailApp
{
  public static void main(){
      Scanner n = new Scanner(System.in);
      Email[] emailList=new Email[5];

      for(int i=0; i<emailList.length; i++){
       System.out.println("Enter your details:");
       System.out.print("First Name: ");
       String First = n.next();
       System.out.print("Last Name: ");
       String Last = n.next();
       emailList[i] = new Email(First, Last);
       System.out.println();
      }
      System.out.print("-------------Students Details--------------------");
      for(Email email : emailList){
          System.out.println(email.toString());
       }
   }
}                                   //End of Class EmailApp
```

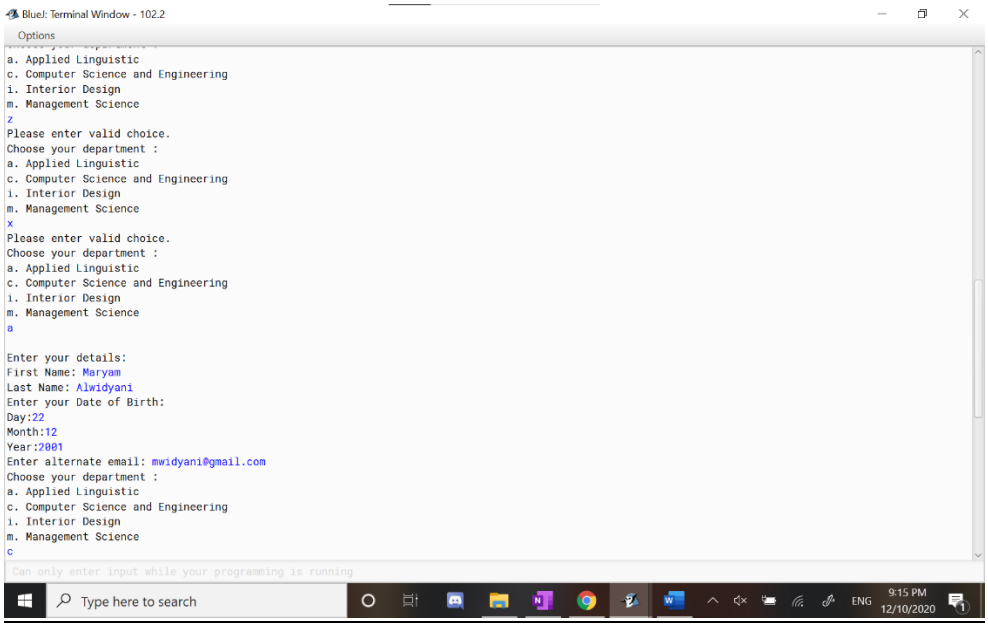
Output (Compilation, Debugging & Testing)

- Testing with a **correct** input of department:

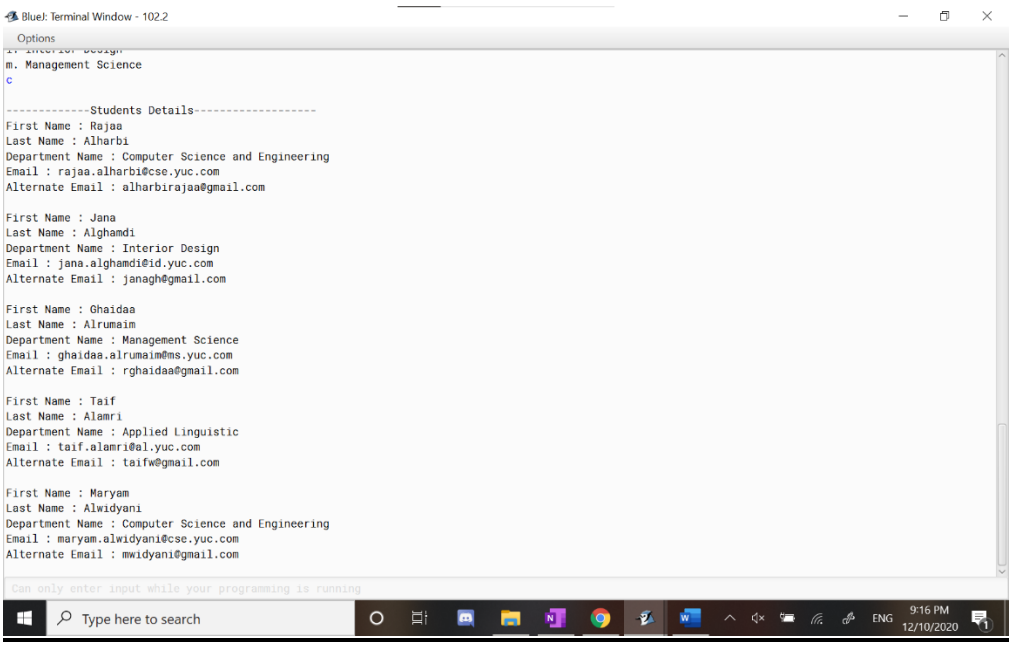




❖ Testing with **Incorrect** input of department:



❖ **The Output:**



Discussion and Conclusion:

This project focused on how we can use all the things we have learned in Object-Oriented Programming in this semester. And how we can solve a problem in a suitable way. Also, how to design proper output.