Exercise 2: Email Address [50 marks]

Problem Statement

A company plans to develop an application for NUS students to buy and sell their second-hand textbooks. To make sure that the users are NUS students, the application should be able to check whether an email addressed used for registration is a valid NUS email address. In addition, it should also be able to check whether the email address used is a friendly email address, so that it can remind the users to update the friendly email addresses if there are any changes.

You have been hired by this company to write a part of this application. Your program should read in an input string and check whether the input is a valid NUS email address. If so, it should also check whether the input is a friendly email address.

After searching for relevant information online, you have found out that an email address is a **valid NUS email address** if all of the following criteria are met:

- The email address should consist of two parts: a local part and a domain part. These two parts are separated by the symbol '@'.
- The local part of the email address should be 3 to 21 characters long (both inclusive). It must start with a letter but the rest of it can be letters, digits or periods ('.').
- The domain part should be "u.nus.edu".

For example, "benedict.90@u.nus.edu" is a valid NUS email address.

In addition, you have also found out that a **friendly email address** is a valid NUS email address whose local part is **not** an 'a' or an 'e' followed by 7 digits. For example, "benedict.90@u.nus.edu" is a friendly email address but "a1234567@u.nus.edu" is not.

You may assume that the input is at most 50 characters long and does not contain any uppercase letters or white spaces.

Write on the skeleton file **email.c** given to you. You must include the following function in your program:

- **`int checkEmail(char email[])`**
  which takes in an input string **`email`**. It returns 0 if **`email`** is not a valid NUS email address, 1 if **`email`** is valid but not friendly, or 2 if **`email`** is both valid and friendly.

You may define additional functions as needed. Check sample runs for input and output format.

Sample Runs

Five sample runs are shown below with user input highlighted in **bold**.

Set #1: // Meets all criteria

```
Enter email address: benedict.90@u.nus.edu
This email address is valid and friendly.
```

Set #2: // Not friendly because the local part is 'a' followed by 7 digits

```
Enter email address: a1234567@u.nus.edu
This email address is valid but not friendly.
```

Set #3: // Too short

```
Enter email address: a@u.nus.edu
This email address is not valid.
```

Set #4: // Contains illegal character '+'

```
Enter email address: a+b@u.nus.edu
This email address is not valid.
```

Set #5: // Wrong domain

```
Enter email address: bobby@nus.edu.sg
This email address is not valid.
```