# Sample Exam Question: COMP20250

1. **Answer parts (a) to (d).**                                    **25 marks in total**
   **(a) (3 marks)**

   The class SimpleUser has already been implemented (and is provided as a compiled class in the corresponding jar file). It has three instance variables:
   1. name (a String)
   2. age (an int)
   3. email (a String)

   It also has a corresponding accessor and mutator method for each of these instance variables.

   Define the interface for this class, call it User. SimpleUser has been compiled to use this interface.

   **(b) (3 marks)**

   The class CheckedUser is also of type User. Implement this class with an overloaded constructor, such that it can be constructed with:
   - just name,
   - name and age, or
   - name, age and email.

   **(c) (12 marks)**

   Provide validation checking for CheckedUser to ensure that each of the instance variables are valid according to the following rules:
   - Name has 1 or 2 words and no prefix (e.g. Mr, Mrs, Ms, Miss, or Dr)
   - Age is between 18 and 30
   - The email address is a valid email address, of the form
     <name>@<somewhere>.<something>
     For example: simon.caton@ucd.ie; simon@ucd.ie; simon.caton@tcd.ie; simon@sap.com; The name in the email address should be equal to the instance variable name (with dots between the name parts, if applicable), email addresses should be stored in lower case even if provided otherwise.

   Use appropriate unchecked Exceptions when any of these rules are violated. In some cases, multiple rules may be violated simultaneously. Report the first violation found. Always check name, before age, and age before email.

   **(d)  (2 marks)**

   Add a toString method to CheckedUser. Returning a String of the form:
   - When only name has been set: CheckedUser: name
     e.g. CheckedUser: Fred Bloggs

- When only name and age have been set: CheckedUser: name (age)
  e.g. CheckedUser: Alice Bloggs (19)
- When all instance variables have been set: CheckedUser: name (age), email
  e.g. CheckedUser: Bill Bloggs (24), bill.bloggs@ucd.ie

**(e) (5 marks)**

Ensure that your code is:
  i.  well formatted

**(0.5 marks)**

  ii.  applies any appropriate best practices and/or minimises repetition

**(3.5 marks)**

  iii.  appropriately commented

**(1 mark)**