

# Programming – TU857/1

## Lab 18 – Thursday, March 21<sup>st</sup>, 2024

**Note:** You are expected to finish all programs in your own time if you do not get these done during the lab session. This is your own responsibility.

### Structures (part 2)

**Remember:** Use Symbolic names in your programs. Do not hard-code.

Write separate programs to:

1. Using Structures, write a program to do the following:

Design structure templates to store data as follows:

*Airline name, Flight number, Passenger surname, Seat number, destination, no of bags*

Using **functions only**, your program must:

- a) Enter the travel information for 2 passengers
- b) Display the data for each passenger

### **Mandatory Exercise Question – You must complete and Demo to your Lab TA**

2. Using Structures, write a program to store biographical data about a person.

Your program must:

- a) Enter data for a person's first name, surname, date of birth (use a nested structure), height, weight, eye colour & country of citizenship
- b) Display all the data entered
- c) Copy the data and store it in a 2<sup>nd</sup> person's record. Modify the first name, surname and date of birth only
- d) Display all the data for the 2<sup>nd</sup> person

3. Copy the program from Q3. Modify this so that you use an array to store data for 3 people instead of 3 separate structure variables for each person.

Remember, to create an array of structures, let's assume the structure template is the same `student_rec` structure taught in class. To declare an array of these in `main()` or any other function, you would state:

```
struct student_rec people[3];
```

e.g., to access the first array element's height, you would write:  
`people[0].height = 170;`

4. Write a program that uses a Structure to store the following details for a city:
- City name
  - Population
  - Annual rainfall (mm)
  - Annual sunshine (hours)
- (i) Enter the above details for 1 city.
- (ii) Using a **pointer variable** only, display the data entered. Hint: create a pointer variable that will point at the structure variable. Then use the arrow-notation, i.e., `->` to access the data.
- (iii) Calculate the city with the highest annual rainfall and the city with the lowest annual sunshine.