# Guide to R Programming Labs

Welcome to the lab of Advanced Programming in R! Here is some general information about the lab.

## Real-world and online Labs

Due to the current COVID-19 situation, the lab will be run in both real-world and online format in parallel. The time of both real-world and online lab is the same, and students can choose which lab to join. The date, time and location of the labs can be found on TimeEdit. Online lab is run on Zoom:

Zoom link: https://liu-se.zoom.us/j/67509236639?pwd=VjZ2SkRyZmQ4bFJZWkhUSFBWaVhwZz09
Meeting ID: 675 0923 6639
Passcode: 546835

Bayu, Yifan and Shashi will attend to real-world lab sessions in the University and Hao will be available online via Zoom.

## Important: What to do in the lab hours

In the lab, you should be trying to solve programming problems and you can ask your lab assistant questions. Please keep in mind the following:

1. Most lab assignments have more than one programming problems, so **please allocate time for all of the problems and do not spend the entire lab solving only the first question.** You may either have different group member solving seperate problems (if applicable) or split the time during the lab hours. Nonetheless, all members of the group must have went through, agreed upon and understood all parts of the solutions before handing in.
2. **Save your own time** by start solving the problems before the lab hours. It is way better than discovering problems at home, getting stuck, and typing up emails to your lab assistants afterward. Face-to-face is always better than emailing.

## How to hand in your work

All work must be submitted via LISAM. The first two labs will be individual and you have to submit an `.R` file. For the group work you should send a link to a git repo and the latest commit should not be after the deadline.

## Debugging 101

Experienced programmers often do the followings when we encounter programming problems:

- **Always** use `print()` and `browser()` first when in doubt!
- Make use of R's extensive documentation by typing `?someFunction()`
- **Read error messages critically**. For example, when you see something like this:

  ```
  In if (c(1, 2, 3) == 2) print("true") :
    the condition has length > 1 and only the first element will be used
  ```

  Ask yourself these: What does ”condition” means? Does the ”condition” has length > 1? Why doesn't R like that?
- **Learn about (or Google) the nouns.** For example, when you see an error message you don't know, say,

  ```
  no applicable method
  ```

  The first thing an experienced programmer do is to look up what is an ”applicable method”, or ”method”. A lot of times you have already heard it in the lectures or on the slides. Otherwise if you Google this, you will quickly come across the term ”generic functions”. Now if you read about generic functions, then you should be able to better understand what R is complaining about.
- **It is normal for a beginner to feel the amount of technical jargons is overwhelming**, so much so that everything has become incomprehensible. This is a process of becoming an experienced programmer: you learn most of them. Many of them are already in the lectures and slides. If not, you can always ask your teacher or lab assistants.

## Asking for Help

We are always happy to help when you get stuck. But please understand that **it is your job to fix your code line-by-line and our job is to fix your skill.** Questions should be asked during the lab hours. In case you need help outside of the lab hours, you can email Hao Chi Kiang or Zoom-call him during his online office hour:

Hao Chi Kiang <hao.chi.kiang@liu.se>
Office hour for this course: 11:00 ~ 13:00 every Friday
Office-hour Zoom: Same as the lab

The email response time is a random variable, sometimes can be several working days due to the amount of emails we receive.

## Contact Information of all Lab Assistants

- Bayu Brahmantio <baybr878@student.liu.se>
- Yifan Ding <yifdi697@student.liu.se>
- Hao Chi Kiang <hao.chi.kiang@liu.se>
- Shashi Nagajaran <shana299@student.liu.se>