

AUA CS 108, Statistics, Fall 2019

R Lab Session 02

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Some Basic **R** Problems

Problem 1

- ▶ Clear the **R** Console
- ▶ Execute `3 + sin(4)` in Console
- ▶ Execute `log(exp(1))` in Console
- ▶ Execute `3 - sin(4)` in Console
- ▶ Print the value of π
- ▶ Calculate 3^{10}
- ▶ View the History of your Commands

Problem 2

- ▶ Create and Save a new **.R** Script File
- ▶ Write the following code in that Script File and execute line by line:

```
sin(pi)  
3+2  
log(5)  
exp(2)
```

- ▶ Execute the last two lines of your Script File Simultaneously
- ▶ Close and then Open your Script File

Problem 3

- ▶ Define a new variable x with the value $\sin(1)$
- ▶ Find the variable x in the Global Environment
- ▶ Erase the variable x
- ▶ Again define x , with the value 3
- ▶ Print the value of x
- ▶ Keep the vector $(1, 2, 3, 5)$ in a variable y
- ▶ Keep the vector $(2, 4, 5)$ in the variable z
- ▶ Calculate the sum of y and z
- ▶ Print the 4-th element of y
- ▶ Add the element 21 to y , at the end, then print y

Problem 4

- ▶ Find the largest element in y
- ▶ Find the Length of the vector y
- ▶ Find the cube of each element in y
- ▶ Find the sine of each element of y

Problem 5

- ▶ Make the vector $(3, 4, 5, 6, 7)$
- ▶ Make the vector $(3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7)$
- ▶ Find the point dividing $[1, 4]$ into 6 equal-length subintervals
- ▶ Make the vector $(2, 2, 2)$
- ▶ Make the vector $(1, 1, 1, 2, 2, 2)$
- ▶ Make the vector $(1, 2, 3, 1, 2, 3, 1, 2, 3)$
- ▶ Make the vector $(1, 3, 5, 7, 8, 8, 8, 8, 8)$

Problem 6

- ▶ Choose a Sample of size 10 from the $Unif[0, 1]$, Print the values
- ▶ Choose a Sample of size 10 from the $Unif[2, 5]$, Print the values
- ▶ Choose a Sample of size 20 from the $\mathcal{N}(0, 1)$
- ▶ Choose a Sample of size 20 from the $\mathcal{N}(1, 4)$
- ▶ Choose a Sample of size 10 from the $Poisson(2.4)$
- ▶ Sort the last vector both in increasing and decreasing orders

Problem 7

- ▶ Define x to be the vector $(2, 3, 1, 4, 5, 2, 6, 2)$
- ▶ Choose the 2-nd and 4-th elements of x as a new vector
- ▶ Choose the first 3 elements of x as a new vector
- ▶ Choose all elements of x into a new vector, except the 4-th one
- ▶ Choose all elements of x that are larger than 3

Problem 8

- ▶ Make a DataFrame with 2 Variables and 3 observations
- ▶ Choose the first Variable as a vector
- ▶ View and Edit the DataFrame
- ▶ Print the head and tail of the Dataset cars

Problem 9

- ▶ Make some basic plots of functions (sin, cos, PDFs and CDFs)