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WST 212 - Practical 1 submission

Instructions:

- Complete the questions which follow and save all your code in a single R script, named Practical1.R ● Only 1 submission is required for this Lab, namely a code submission.

Submission 1: Code 💻

- Multiple code submissions are allowed and your autograded results will be available shortly after each submission.
- Ensure all variables are named correctly, as incorrectly named variables will not be awarded any marks. (Remember variable names are case sensitive.)
- Ensure your code does not consist of any syntax errors. If your code produces errors when run, the autograder will not be able to mark it.
- Any code commented out (code is commented out when # is typed in front of it) will be considered rough work and will not be marked.
- Once you have completed your submission, ensure the file is submitted on Gradescope, with the correct file name. The autograder will only be able to grade your submission if you use the correct filename.

Guidelines:

- The following code in the provided template will generate and save the necessary data within the relevant objects:

```
col1 <- c(7,1,7,4,9)
col2 <- c(7,3,7,5,2)
col3 <- c(7,7,7,7,7)
```

- A template that can be used for this assignment has been provided on ClickUP.
- Remember to assign your code to the variables indicated in this document.

Questions:

1. Matrices
   1.1. 💻 Create a matrix, 'cmatrix', that has 4 rows and 3 columns and fill the matrix with numbers from 1 to 12 by column. For example, the first column's numbers will be 1 2 3 4 and the first row's number will be 1 5 9.
   1.2. 💻 Create a matrix, 'rmatrix', that does the same as 1.1, but fills the matrix by row. For example, the first row's numbers will be 1 2 3 and the first column's numbers will be 1 4 7 10.
   1.3. 💻 Extract the value from cmatrix that is in the 2nd row, 3rd column and assign it to the variable m.
2. Data frames
   2.1. 💻 Create a data frame with the vectors given in the guidelines as columns, namely col1, col2, and col3 (In that order). Name your data frame 'df1'.
   2.2. 💻 Using your newly created data frame in question 1, create a new data frame by dropping the 2nd and 4th rows, as well as the 3rd column from data frame 'df1'. Call this new data frame 'df2'.
   2.3. 💻 Finally, perform a column summation (sum each column) of data frame 'df2' using the apply() function. Name this data frame 'df3'.
3. Functions

💻 Create a function, 'calc' that takes in 3 numbers as arguments and calculates ans= a^{b^c} and returns the ans. Call the function for a=4, b=3 and c=2 and assign the answer to the variable cc.

4. Conditional statements

💻 Create a function 'valid' that prints out the answer of ans= a^{b^c} if c is not equal to 0 and returns "Invalid inputs" if it is equal to 0. Run this function with the inputs a=3, b=10, and c=0 and assign the answer to the variable d.

5. Loops

💻 Use a loop to fill an empty vector 'results' with the answer of a^{b^c} for b=2 , c=3 and a= i and the loop runs 5 times (n=5).