**Learning Activity 3 – Arrays**

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| Activity | * Create a 4x3x2 array of 24 elements using the random values between 1 and 50
* Name the columns, rows and matrices using names of your choice
* Print the array
* Print the second matrix
* Print the last row of the second matrix
* print the second column of the first matrix
* Save the above script as **Activity 2\_5\_4\_2**
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| **Example** |
| # Naming the rows, columns and matricescolumn.names <- c("Col1","Col2","Col3")row.names <- c("Row1","Row2","Row3")matrix.names <- c("Matrix1","Matrix2")# Create two vectors of different lengths for array1vector1 <- c(seq(5,21,by=2))vector2 <- c(1,2,3)# Inputting the vectors, dimensions and names to the array, array1array1 <- array(c(vector1,vector2),dim = c(3,3,2),dimnames = list(row.names,column.names,matrix.names))cat ("Array1\n")print(array1)# Create two vectors of different lengths for array2vector3 <- c(11,12,13)vector4 <- c(1,-10,5,1,3,-2,6,2,9)# Creating array2array2 <- array(c(vector3,vector4),dim = c(3,3,2),dimnames = list(row.names,column.names,matrix.names))cat ("Array2\n")print(array2)# create matrices from the first matrix of these arraysmatrix1 <- array1[,,1]matrix2 <- array2[,,2]cat ("Matrix1 - 1st Matrix of Array1\n")print(matrix1)cat ("Matrix2 - 2nd Matrix of Array2\n")print(matrix2)# Subtracting the matrices to get array3matrix3 <- matrix1 - matrix2matrix4 <- matrix1 + matrix2cat ("Matrix3\n")print(matrix3)cat ("Matrix4\n")print(matrix4)# Creating array3 from matrix3 and matrix4array3 <- array(c(matrix3,matrix4),dim = c(3,3,2),dimnames = list(row.names,column.names,matrix.names))cat ("Array3 made up from Matrix 3 and Matrix 4\n")print(array3) |

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| Activity | * Copy and run the above example in a new R script.
* Create an array, array4, with the second matrix of array1 and the first matrix of array2.
* From array4, subtract array3 and save it as array5
* Print array5 which should display the following:

, , Matrix1 Col1 Col2 Col3Row1 2 5 -5Row2 -3 6 -16Row3 3 7 -1, , Matrix2 Col1 Col2 Col3Row1 0 -21 -17Row2 3 -35 -6Row3 -5 -23 -28* Save the above script as **Activity 2\_5\_4\_3**
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| Activity | * This activity continues from the previous activity.
* For array5, calculate and display the:
* sum of the rows across all matrices
* sum of the columns across all matrices
* product of the rows across all matrices
* product of the columns across all matrices
* mean of the columns across all matrices
* the sum of the respective elements across all matrices
* Save the above script as **Activity 2\_5\_4\_4**
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