**Experiment No. 1**

**Problem Statements**

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| **Sr. No.** | **Topic** | **Problem Statements** |
| **1** | **Understanding Basic Data Types in R** | Ram went to a shop to buy chocolates. He carried Rs. A in his pocket where ‘A’ is a real number (For eg., 10.5 means 10 Rupees 50 paise). He bought ‘B’ chocolates for the Rupee part of the money he had. where ‘B’ is an integer value (for eg., 5 means 5 chocolates). Compute the cost of a chocolate.   1. Let the money be denoted as variable A. Assign a decimal value to it and display it. 2. Print the class name of the variable A. 3. Check whether the variable A is of type ‘numeric’. 4. Let the number of chocolates be denoted as variable B. Assign an integer value to it and display it. 5. Check whether the variable B is of type ‘integer’. 6. Create a variable C which stores the rupee part of the money he carried. 7. Compute the cost of a chocolate. 8. Represent the money as character string. 9. Store the first name and last name of the kid. 10. Display the message “<firstname lastname> bought <B> chocolates”   Consider the kids rhymes “Twinkle Twinkle Little Star”   1. Extract the substring “Little ” from the rhymes. 2. Replace “Little” as “Big”.   Babu wanted to know about complex number. Help him to understand the real and imaginary part of the complex number. Show him that square root of a negative value can be computed by converting it into a complex number.   1. Assign a complex number to a variable X. 2. Display the real part of X. 3. Display the imaginary part of X. 4. Compute square root of a negative number. 5. Check whether real part of X is greater than its imaginary part. |
| **2** | **String Operations using R** | 1.Create string “Learning R Programming is Very Interesting”  2. Count number of characters in string  3. Display each word of string separately  4. Display String in uppercase  5. Display string in lowercase  6. Display substring as “R Programming”  7. Display string in reverse order |
| **3** | **List operation using R** | 1. Create four vectors to maintain product information like product name, quantity, and price, discount (yes/no. Create product details list by combining all vectors  2. Provide name to the list element  3. Display product name and discount  4. Display quantity, price of last product  5. Modify/increase quantity of first product by 5  6. Create list of brands and merge both lists |
| **4** | **Working with Vectors in R** | A test report contains average marks of class1 to class 5.   1. Create vector ‘class’ to store the class names ‘class1’,’class2’,…,’class5’ 2. Use assign() function to create a vector ‘avg’ to store the average marks. 3. Display the average mark of class2. 4. Display all the average marks except class 2. 5. Access the average mark of class4 by its name. 6. Find the minimum average mark and print the class which scored it. 7. Find the maximum average mark and print the class which scored it. 8. Find the total of average marks scored by all classes. 9. Find the mean of the average marks scored by all classes. 10. Find the standard deviation of the average marks scored by all classes. 11. Arrange the average marks in ascending order. 12. Create a vector classes by repeat the vector class twice. 13. Create a vector marks by repeating each average mark twice. 14. Create a vector ‘report’ by adding the vector ‘avg’ with a sequence of 10 to 1 and find its length. 15. Identify the classes for which average marks>70. |
| **5** | **Operations on Matrices using R** | 1.Create 2 matrix of 3\*3 from two vectors  2. Display Addition of two matrices  3. Display Subtraction of two matrices  4. Display multiplication of two matrices  5. Display transpose of matrix  6. Display Inverse if matrix  7. Display even numbers from matrix  8. Display sum of matrix elements. |
| **6** | **Working with matrices in R** | 1. Represent the height in cm information of a team of 12 basketball players as a matrix of dimension 4x3 in row major form. 2. Access the height at row 3 and column 2. 3. Display all the heights in row 2. 4. Display all the heights in column 3. 5. Extract the heights in all rows but only in column 1 and 3. 6. Find the transpose of the matrix. 7. Four more players got added to the team. Update the matrix to reflect the heights of the players. 8. Append three more players’ height in the matrix. |