Tutorial -2

Data Analytics using R & Python (22B12CS413)

Q.1 Create the vectors:

a) (1; 2; 3; : : : ; 19; 20)

b) (20; 19; : : : ; 2; 1)

c) (1; 2; 3; : : : ; 19; 20; 19; 18; : : : ; 2; 1)

d) (4; 6; 3) and assign it to the name tmp.

e) (4; 6; 3; 4; 6; 3; : : : ; 4; 6; 3) where there are 10 occurrences of 4.

(f) (4; 6; 3; 4; 6; 3; : : : ; 4; 6; 3; 4) where there are 11 occurrences of 4, 10 occurrences of 6 and 10 occurrences of 3.

Q.2 Create a vector of the values of $e^x \cos(x)$ at x = 3; 3:1; 3:2,…..; 6.

Q. 3. Create the following vectors:

(a) ($0{:}1^3\ 0{:}2^1$; $0{:}1^6 0{:}2^4$; …..; $0{:}1^{36} 0{:}2^{34}$)

(b) ($2;2^2/2;2^3/3;……..;2^{25}/25$)

Q.4. Calculate the following:

(a)

$$\sum_{i=10}^{100} (i^3 + 4i^2)$$

(b)$\sum_{i=1}^{25} \frac{2i}{i} + \frac{3i}{i^2}$

Q.5 Execute the following commands for creating factors in R. Interpret the output of each command.

- a<- c(1,-5,3.4,-2,5,3)
- factor(a)
- factor(a,1:5)
- factor(a,3:5)
- factor(a,-10:5)

Q.6 Assume that you are interested in cone-shaped structures, and have measured the height and radius of 6 cones. Make vectors with these values as follows:

R <- c(2.27, 1.98, 1.69, 1.88, 1.64, 2.14)

H <- c(8.28, 8.04, 9.06, 8.70, 7.58, 8.34)

Recall that the volume of a cone with radius R and height H is given by $1/3\ \pi R^2 H$. Make a vector with the volumes of the 6 cones.