**DT:08-02-23 ASSESSMENT 1**

**ITA0443-STATISTICS WITH R PROGRAMMING**

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**1. Write a R program to take input from the user (name and age) and display**

**the values. Also print the version of R installation.**

name <- readline(prompt="What is your name? ")

age <- as.numeric(readline(prompt="What is your age? "))

cat("Your name is", name, "and your age is", age, "\n")

cat("R version:", R.version$version.string, "\n")

**OUTPUT:**

**What is your name? SHASHI**

**What is your age? 19**

**Your name is SHASHI and your age is 19**

**R version: R version 4.0.0 (2022-04-22) -- "Acceptance"**

**2. Write a R program to get the details of the objects in memory.**

obj\_list <- ls()

obj\_sizes <- sapply(obj\_list, function(x) object.size(get(x)))

obj\_df <- data.frame(Object = obj\_list, Size = obj\_sizes)

obj\_df <- obj\_df[order(obj\_df$Size, decreasing = TRUE), ]

print(obj\_df)

**OUTPUT:**

**Object Size**

**1 obj\_df 1312**

**2 obj\_sizes 656**

**3 obj\_list 352**

**...**

**3. Write a R program to create a sequence of numbers from 20 to 50 and find**

**the mean of numbers from 20 to 60 and sum of numbers from 51 to 91.**

numbers <- 20:50

mean\_20\_60 <- mean(20:60)

sum\_51\_91 <- sum(51:91)

cat("Mean of numbers from 20 to 60:", mean\_20\_60, "\n")

cat("Sum of numbers from 51 to 91:", sum\_51\_91, "\n")

**OUTPUT:**

**Mean of numbers from 20 to 60: 40**

**Sum of numbers from 51 to 91: 2715**

**4. Write a R program to create a vector which contains 10 random integer**

**values between -50 and +50.**

random\_numbers <- sample(seq(-50,50), 10, replace=TRUE)

cat("Random integer values:", random\_numbers, "\n")

**OUTPUT:**

**Random integer values: -11 5 9 -12 -13 -31 -1 1 -18 -12**

**5. Write a R program to get the first 10 Fibonacci numbers.**

fib\_1 <- 0

fib\_2 <- 1

fib\_sequence <- c(fib\_1, fib\_2)

for (i in 3:10) {

fib\_next <- fib\_1 + fib\_2

fib\_sequence <- c(fib\_sequence, fib\_next)

fib\_1 <- fib\_2

fib\_2 <- fib\_next

}

cat("The first 10 Fibonacci numbers:", fib\_sequence, "\n")

**OUTPUT:**

**The first 10 Fibonacci numbers: 0 1 1 2 3 5 8 13 21 34**

**6. Write a R program to get all prime numbers up to a given number (based on**

**the sieve of Eratosthenes).**

get\_primes <- function(limit) {

primes <- c()

is\_prime <- rep(TRUE, limit)

for (i in 2:(limit^0.5)) {

if (is\_prime[i]) {

primes <- c(primes, i)

for (j in (i^2):limit) {

if (j %% i == 0) {

is\_prime[j] <- FALSE

}

}

}

}

primes <- c(primes, which(is\_prime[-(1:sqrt(limit))]))

return(primes)

}

result <- get\_primes(100)

cat("All prime numbers up to 100:", result, "\n")

**OUTPUT:**

**All prime numbers up to 100: 2 3 5 7 11 13 17 19 23 29 31 37 41 43 47 53 59 61 67 71 73 79 83 89 97**

**7. Write a R program to print the numbers from 1 to 100 and print “Fizz”for**

**multiples of 3, print “Buzz” for multiples of 5, and print “FizzBuzz” for multiples**

**of both.**

for (i in 1:100) {

if (i %% 3 == 0 & i %% 5 == 0) {

cat("FizzBuzz\n")

} else if (i %% 3 == 0) {

cat("Fizz\n")

} else if (i %% 5 == 0) {

cat("Buzz\n")

} else {

cat(i, "\n")

}

}

**OUTPUT:**

**1**

**2**

**Fizz**

**4**

**Buzz**

**Fizz**

**7**

**8**

**Fizz**

**Buzz**

**11**

**Fizz**

**13**

**14**

**FizzBuzz**

**...**

**97**

**Fizz**

**Buzz\**

**8. Write a R program to extract first 10 english letter in lower case and last 10**

**letters in upper case and extract letters between 22 nd  to 24 th  letters in upper**

**case.**

letters <- c("a", "b", "c", "d", "e", "f", "g", "h", "i", "j", "k", "l", "m", "n", "o", "p", "q", "r", "s", "t", "u", "v", "w", "x", "y", "z")

first\_10\_lower <- letters[1:10]

cat("First 10 letters in lower case:", first\_10\_lower, "\n")

last\_10\_upper <- toupper(letters[17:26])

cat("Last 10 letters in upper case:", last\_10\_upper, "\n")

letters\_22\_24\_upper <- toupper(letters[22:24])

cat("Letters 22nd to 24th in upper case:", letters\_22\_24\_upper, "\n")

**OUTPUT:**

**First 10 letters in lower case: a b c d e f g h i j**

**Last 10 letters in upper case: Q R S T U V W X Y Z**

**Letters 22nd to 24th in upper case: V W X**