

## List of experiment

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.

Code

```
name <- readline(prompt = "Enter your name: ")
```

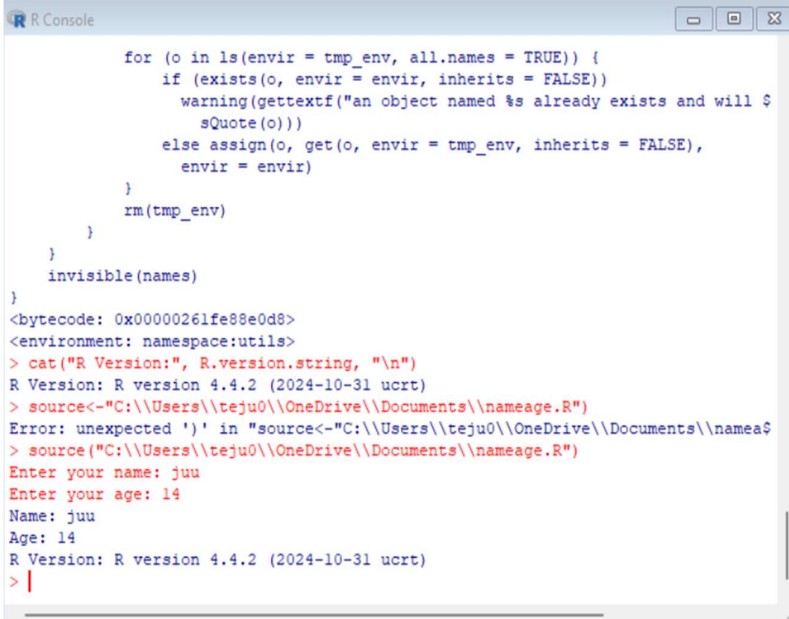
```
age <- readline(prompt = "Enter your age: ")
```

```
cat("Name:", name, "\n")
```

```
cat("Age:", age, "\n")
```

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

output:



```
R Console

for (o in ls(envir = tmp_env, all.names = TRUE)) {
  if (exists(o, envir = envir, inherits = FALSE))
    warning(gettextf("an object named %s already exists and will %s",
                     o, sQuote(o)))
  else assign(o, get(o, envir = tmp_env, inherits = FALSE),
             envir = envir)
}
rm(tmp_env)
}
invisible(names)
}
<bytecode: 0x00000261fe88e0d8>
<environment: namespace:utils>
> cat("R Version:", R.version.string, "\n")
R Version: R version 4.4.2 (2024-10-31 ucrt)
> source("C:\\Users\\teju0\\OneDrive\\Documents\\nameage.R")
Error: unexpected ')' in "source<-"C:\\Users\\teju0\\OneDrive\\Documents\\namea$
> source("C:\\Users\\teju0\\OneDrive\\Documents\\nameage.R")
Enter your name: juu
Enter your age: 14
Name: juu
Age: 14
R Version: R version 4.4.2 (2024-10-31 ucrt)
> |
```

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

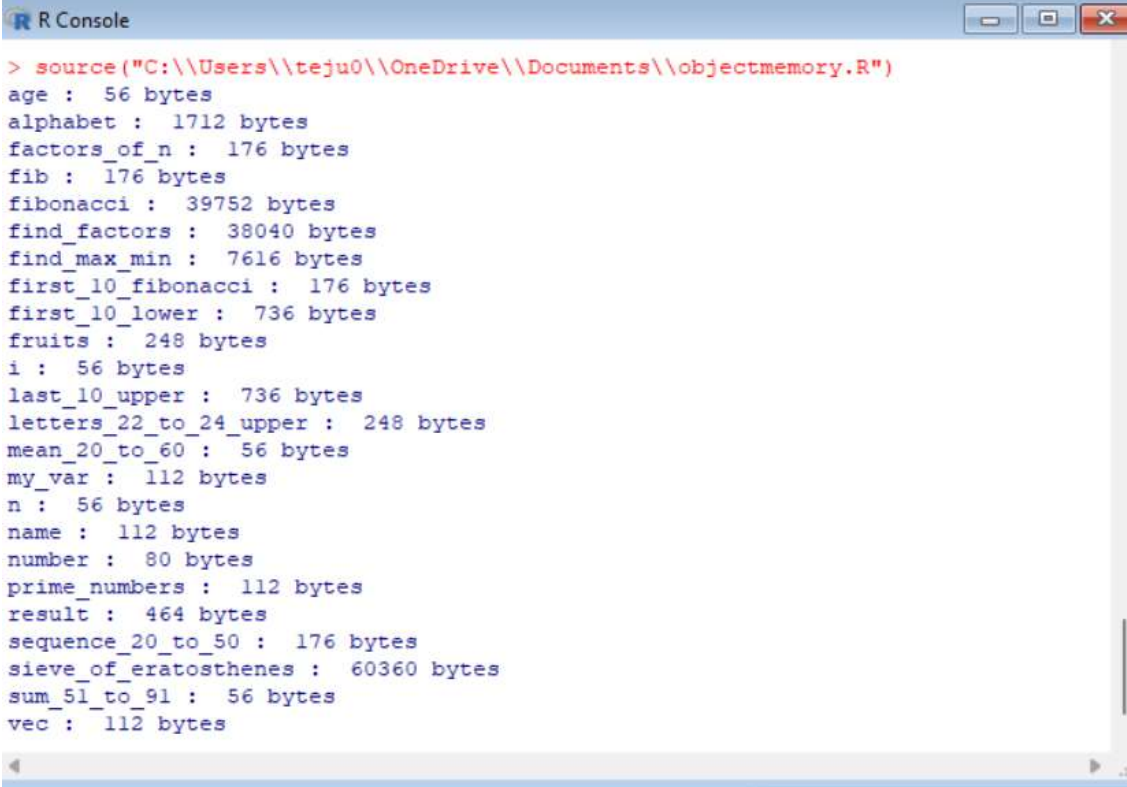
Code:

```
objects <- ls()
```

```
for (obj in objects) {
```

```
cat(obj, ": ", object.size(get(obj)), "bytes\n")
}
```

Output:



```
R Console
> source("C:\\Users\\teju0\\OneDrive\\Documents\\objectmemory.R")
age : 56 bytes
alphabet : 1712 bytes
factors_of_n : 176 bytes
fib : 176 bytes
fibonacci : 39752 bytes
find_factors : 38040 bytes
find_max_min : 7616 bytes
first_10_fibonacci : 176 bytes
first_10_lower : 736 bytes
fruits : 248 bytes
i : 56 bytes
last_10_upper : 736 bytes
letters_22_to_24_upper : 248 bytes
mean_20_to_60 : 56 bytes
my_var : 112 bytes
n : 56 bytes
name : 112 bytes
number : 80 bytes
prime_numbers : 112 bytes
result : 464 bytes
sequence_20_to_50 : 176 bytes
sieve_of_eratosthenes : 60360 bytes
sum_51_to_91 : 56 bytes
vec : 112 bytes
```

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

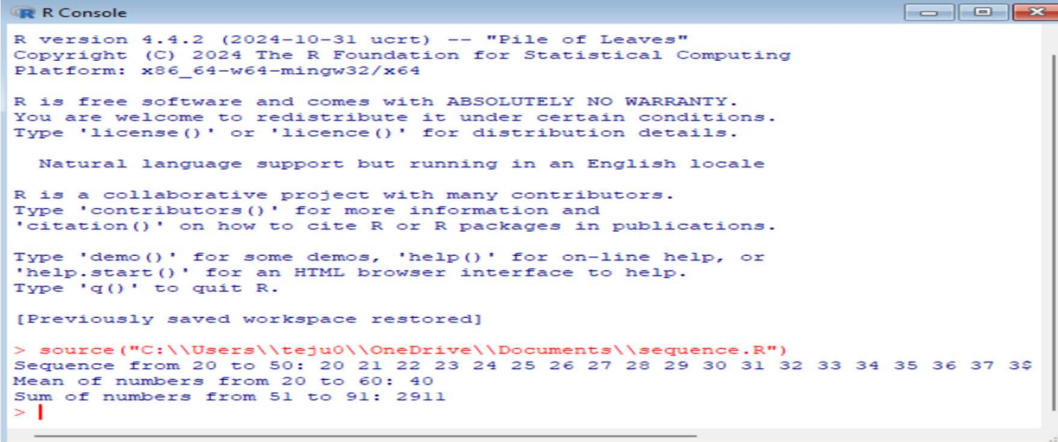
Code:

```
a<- seq(20, 50)
b<- mean(seq(20, 60))
c<- sum(seq(51, 91))
cat("Sequence from 20 to 50:", a,"\n")
```

```
cat("Mean of numbers from 20 to 60:", b, "\n")
```

```
cat("Sum of numbers from 51 to 91:", c, "\n")
```

output:



```
R Console
R version 4.4.2 (2024-10-31 ucrt) -- "File of Leaves"
Copyright (C) 2024 The R Foundation for Statistical Computing
Platform: x86_64-w64-mingw32/x64

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'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

[Previously saved workspace restored]

> source("C:\\Users\\teju0\\OneDrive\\Documents\\sequence.R")
Sequence from 20 to 50: 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38
Mean of numbers from 20 to 60: 40
Sum of numbers from 51 to 91: 2911
> |
```

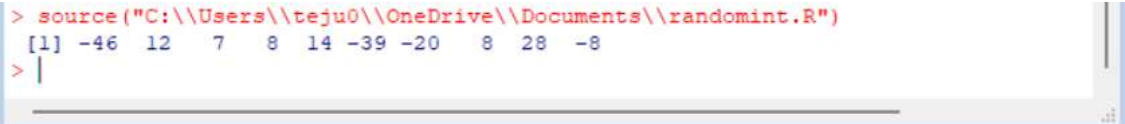
4. Write a R program to create a vector which contains 10 random integer values between -50 and +50.

Code:

```
random_integers <- sample(-50:50, 10, replace = TRUE)
```

```
print(random_integers)
```

output:



```
> source("C:\\Users\\teju0\\OneDrive\\Documents\\randomint.R")
[1] -46 12 7 8 14 -39 -20 8 28 -8
> |
```

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

Code:

```
fib <- c(0, 1)
```

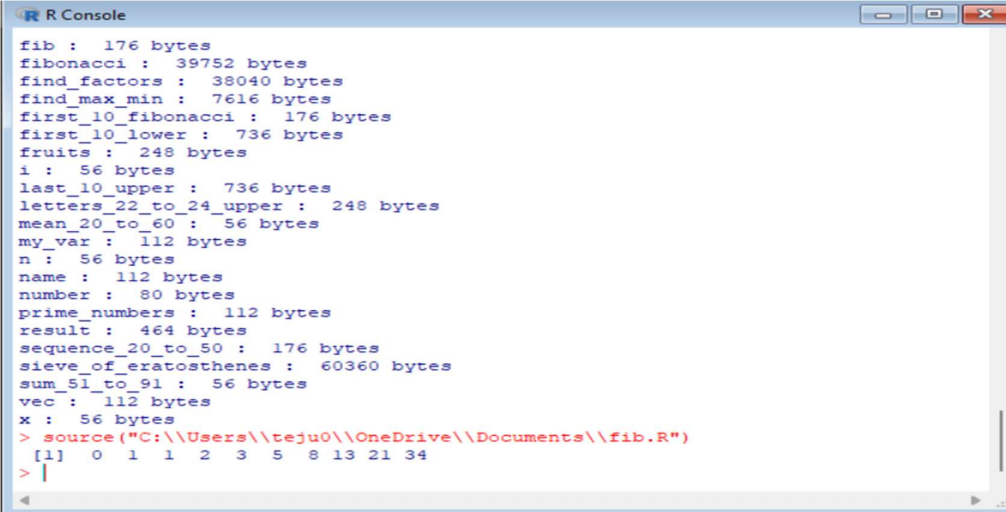
```

for (i in 3:10) {
  fib[i] <- fib[i - 1] + fib[i - 2]
}

print(fib)

output:

```



```

R Console
fib : 176 bytes
fibonacci : 39752 bytes
find_factors : 38040 bytes
find_max_min : 7616 bytes
first_10_fibonacci : 176 bytes
first_10_lower : 736 bytes
fruits : 248 bytes
i : 56 bytes
last_10_upper : 736 bytes
letters_22_to_24_upper : 248 bytes
mean_20_to_60 : 56 bytes
my_var : 112 bytes
n : 56 bytes
name : 112 bytes
number : 80 bytes
prime_numbers : 112 bytes
result : 464 bytes
sequence_20_to_50 : 176 bytes
sieve_of_eratosthenes : 60360 bytes
sum_51_to_91 : 56 bytes
vec : 112 bytes
x : 56 bytes
> source("C:\\Users\\teju0\\OneDrive\\Documents\\fib.R")
[1] 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)

Code:

```

a <- function(n) {
  primes <- rep(TRUE, n+1)
  primes[1] <- FALSE # 0 and 1 are not prime numbers
  for (i in 2:sqrt(n)) {
    if (primes[i] == TRUE) {
      primes[seq(i*i, n, i)] <- FALSE
    }
  }
}

```

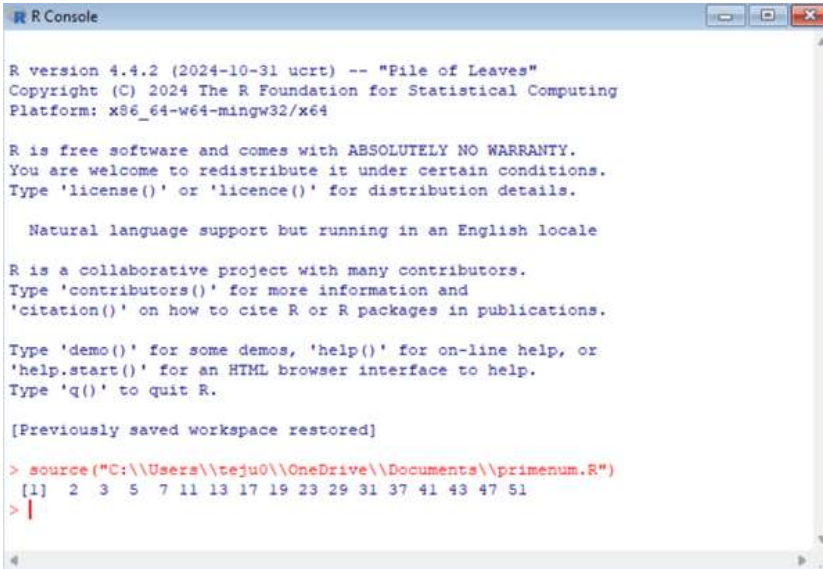
```
    return(which(primes == TRUE))
}
```

```
n <- 50
```

```
prime_numbers <- a(n)
```

```
print(prime_numbers)
```

output:



```
R Console

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Platform: x86_64-w64-mingw32/x64

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Type 'q()' to quit R.

[Previously saved workspace restored]

> source("C:\\\\Users\\\\teju0\\\\OneDrive\\\\Documents\\\\primenum.R")
[1] 2 3 5 7 11 13 17 19 23 29 31 37 41 43 47 51
> |
```

7. Write a R program to print the numbers from 1 to 10 and print "Fizz" for multiples of 3, print "Buzz" for multiples of 5, and print "FizzBuzz" for multiples of both.

Code:

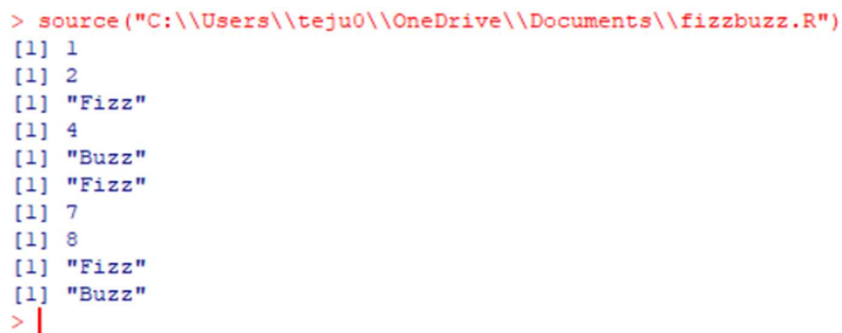
```
for (i in 1:10) {
  if (i %% 3 == 0 && i %% 5 == 0) {
    print("FizzBuzz")
  } else if (i %% 3 == 0) {
    print("Fizz")
  }
}
```

```

    } else if (i %% 5 == 0) {
      print("Buzz")
    } else {
      print(i)
    }
  }
}

```

Output:



```

> source("C:\\Users\\teju0\\OneDrive\\Documents\\fizzbuzz.R")
[1] 1
[1] 2
[1] "Fizz"
[1] 4
[1] "Buzz"
[1] "Fizz"
[1] 7
[1] 8
[1] "Fizz"
[1] "Buzz"
> |

```

8. Write a R program to extract first 10 English letters in lower case and last 10 letters in upper case and extract letters between 22nd to 24th letters in upper case.

Code:

```
alphabet <- letters
```

```
first_10_lower <- alphabet[1:10]
```

```
last_10_upper <- toupper(alphabet[(length(alphabet)-
9):length(alphabet)])
```

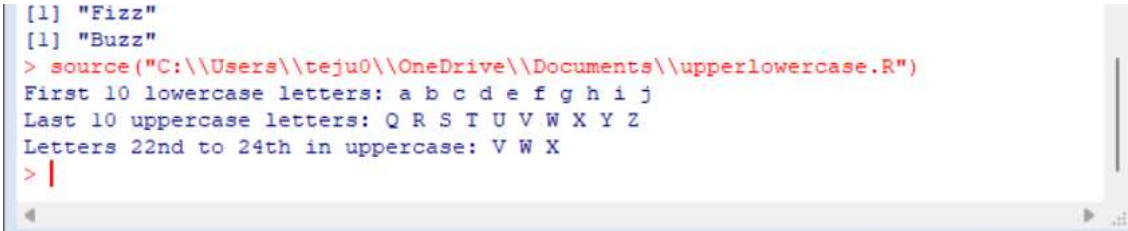
```
letters_22_to_24_upper <- toupper(alphabet[22:24])
```

```
cat("First 10 lowercase letters:", first_10_lower, "\n")
```

```
cat("Last 10 uppercase letters:", last_10_upper, "\n")
```

```
cat("Letters 22nd to 24th in uppercase:", letters_22_to_24_upper,
"\n")
```

output:



```
[1] "Fizz"
[1] "Buzz"
> source("C:\\Users\\teju0\\OneDrive\\Documents\\upperlowercase.R")
First 10 lowercase letters: a b c d e f g h i j
Last 10 uppercase letters: Q R S T U V W X Y Z
Letters 22nd to 24th in uppercase: V W X
> |
```

9. Write a R program to find the factors of a given number

Code:

```
find_factors <- function(n) {
  factors <- numeric(0)
  for (i in 1:n) {
    if (n %% i == 0) {
      factors <- c(factors, i)
    }
  }
  return(factors)
}
```

```
n <- 36
```

```
factors_of_n <- find_factors(n)
```

```
cat("Factors of", n, "are:", factors_of_n, "\n")
```

output:

```
> source("C:\\Users\\teju0\\OneDrive\\Documents\\factors.R")
Factors of 36 are: 1 2 3 4 6 9 12 18 36
> |
```

10. Write a R program to find the maximum and the minimum value of a given vector

Code:

```
maxmin <- function(vec) {
  a<- max(vec)
  b<- min(vec)
  return(list(max = a, min = b))
}
vec <- c(3, 7, 1, 9, 4, 2, 8)
result <- maxmin(vec)
cat("Maximum value:", result$max, "\n")
cat("Minimum value:", result$min, "\n")
```

output:

```
> source("C:\\Users\\teju0\\OneDrive\\Documents\\maxmin.R")
Maximum value: 9
Minimum value: 1
> |
```