R PROGRAMMING

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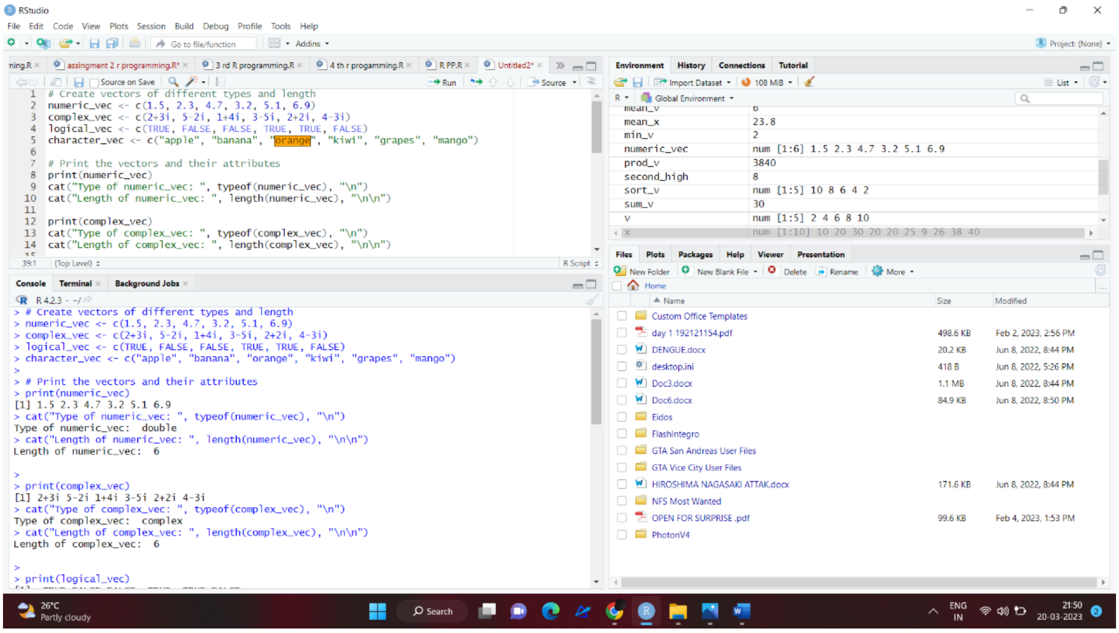
ASSESSEMENT DAY-1 192121147

SET 1

1.Write a R program to create a vector of a specified type and length. Create vector of numeric, complex, logical and character types of length 6 with your own examples. print the vector, type, and length.

Use this vector for Below program

x = c(10, 20, 30, 20, 20, 25, 9, 26,38,40)



```r
# Create vectors of different types and length
numeric_vec <- c(1.5, 2.3, 4.7, 3.2, 5.1, 6.9)
complex_vec <- c(2+3i, 5-2i, 1+4i, 3-5i, 2+2i, 4-3i)
logical_vec <- c(TRUE, FALSE, FALSE, TRUE, TRUE, FALSE)
character_vec <- c("apple", "banana", "orange", "kiwi", "grapes", "mango")

# Print the vectors and their attributes
print(numeric_vec)
cat("Type of numeric_vec: ", typeof(numeric_vec), "\n")
cat("Length of numeric_vec: ", length(numeric_vec), "\n\n")

print(complex_vec)
cat("Type of complex_vec: ", typeof(complex_vec), "\n")
cat("Length of complex_vec: ", length(complex_vec), "\n\n")
```

```
> # Create vectors of different types and length
> numeric_vec <- c(1.5, 2.3, 4.7, 3.2, 5.1, 6.9)
> complex_vec <- c(2+3i, 5-2i, 1+4i, 3-5i, 2+2i, 4-3i)
> logical_vec <- c(TRUE, FALSE, FALSE, TRUE, TRUE, FALSE)
> character_vec <- c("apple", "banana", "orange", "kiwi", "grapes", "mango")
>
> # Print the vectors and their attributes
> print(numeric_vec)
[1] 1.5 2.3 4.7 3.2 5.1 6.9
> cat("Type of numeric_vec: ", typeof(numeric_vec), "\n")
Type of numeric_vec:  double
> cat("Length of numeric_vec: ", length(numeric_vec), "\n\n")
Length of numeric_vec:  6


>
> print(complex_vec)
[1] 2+3i 5-2i 1+4i 3-5i 2+2i 4-3i
> cat("Type of complex_vec: ", typeof(complex_vec), "\n")
Type of complex_vec:  complex
> cat("Length of complex_vec: ", length(complex_vec), "\n\n")
Length of complex_vec:  6


>
> print(logical_vec)
```

mean_v	6
mean_x	23.8
min_v	2
numeric_vec	num [1:6] 1.5 2.3 4.7 3.2 5.1 6.9
prod_v	3840
second_high	8
sort_v	num [1:5] 10 8 6 4 2
sum_v	30
v	num [1:5] 2 4 6 8 10
x	num [1:10] 10 20 30 20 20 25 9 26 38 40

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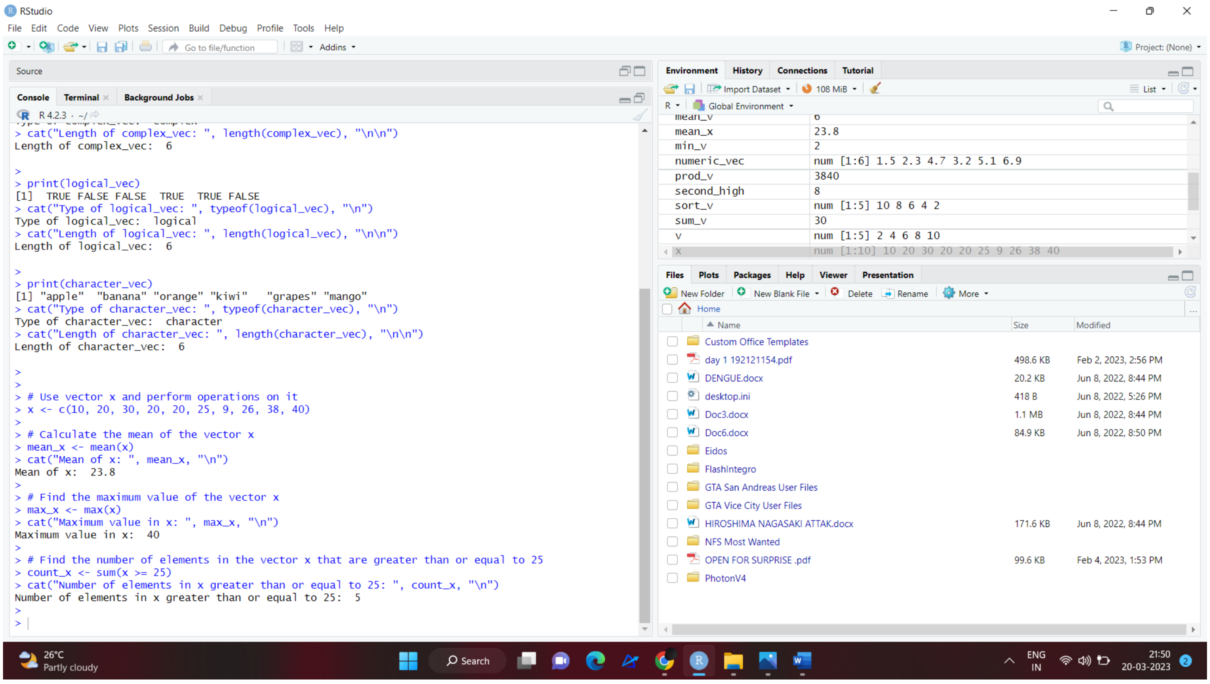

```
> cat("Length of complex_vec: ", length(complex_vec), "\n\n")
Length of complex_vec:  6


>
> print(logical_vec)
[1]  TRUE FALSE FALSE  TRUE  TRUE FALSE
> cat("Type of logical_vec: ", typeof(logical_vec), "\n")
Type of logical_vec:  logical
> cat("Length of logical_vec: ", length(logical_vec), "\n\n")
Length of logical_vec:  6


>
> print(character_vec)
[1] "apple"  "banana" "orange" "kiwi"   "grapes" "mango"
> cat("Type of character_vec: ", typeof(character_vec), "\n")
Type of character_vec:  character
> cat("Length of character_vec: ", length(character_vec), "\n\n")
Length of character_vec:  6


>
>
> # Use vector x and perform operations on it
> x <- c(10, 20, 30, 20, 20, 25, 9, 26, 38, 40)
>
> # Calculate the mean of the vector x
> mean_x <- mean(x)
> cat("Mean of x: ", mean_x, "\n")
Mean of x:  23.8
>
> # Find the maximum value of the vector x
> max_x <- max(x)
> cat("Maximum value in x: ", max_x, "\n")
Maximum value in x:  40
>
> # Find the number of elements in the vector x that are greater than or equal to 25
> count_x <- sum(x >= 25)
> cat("Number of elements in x greater than or equal to 25: ", count_x, "\n")
Number of elements in x greater than or equal to 25:  5
>
> |
```

```
mean_v         6
mean_x         23.8
min_v          2
numeric_vec    num [1:6] 1.5 2.3 4.7 3.2 5.1 6.9
prod_v         3840
second_high    8
sort_v         num [1:5] 10 8 6 4 2
sum_v          30
v              num [1:5] 2 4 6 8 10
x              num [1:10] 10 20 30 20 20 25 9 26 38 40
```

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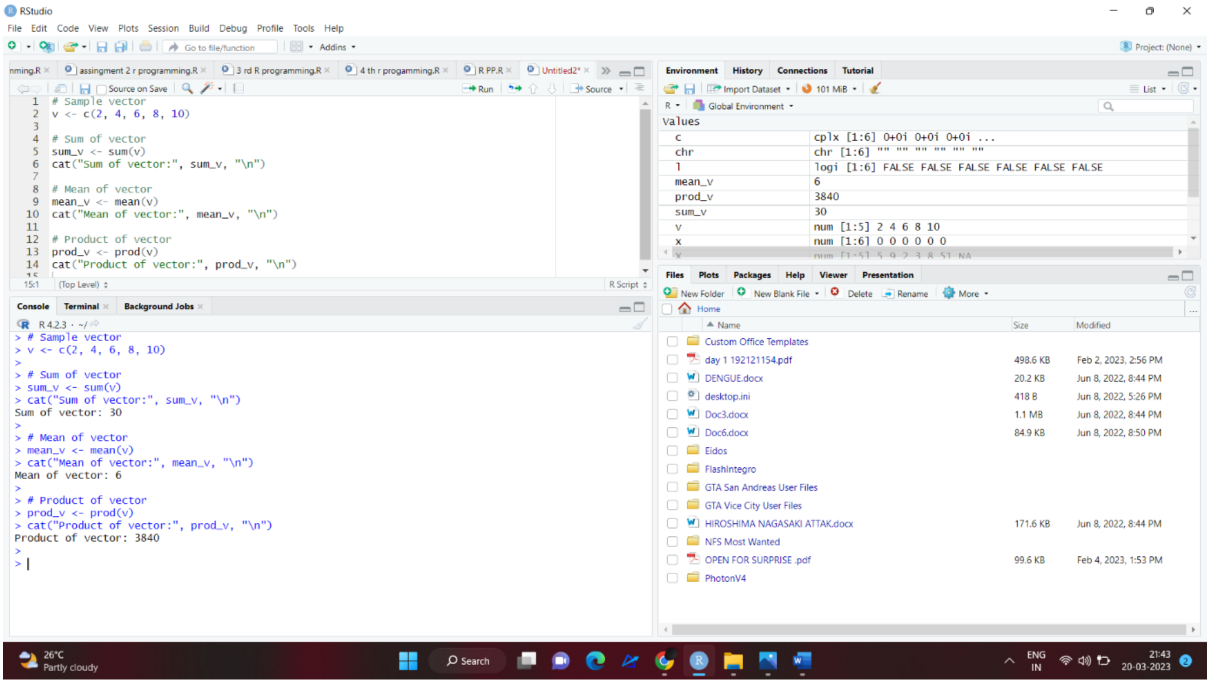
2. Write a R program to find Sum, Mean and Product of a Vector. 3. Write a R program to find the minimum and the maximum of a Vector 4. Write a R program to find second highest value in a given vector.

Write a R program to find Sum, Mean and Product of a Vector. 3.



```
# Sample vector
v <- c(2, 4, 6, 8, 10)

# Sum of vector
sum_v <- sum(v)
cat("Sum of vector:", sum_v, "\n")

# Mean of vector
mean_v <- mean(v)
cat("Mean of vector:", mean_v, "\n")

# Product of vector
prod_v <- prod(v)
cat("Product of vector:", prod_v, "\n")
```

```
> # Sample vector
> v <- c(2, 4, 6, 8, 10)
>
> # Sum of vector
> sum_v <- sum(v)
> cat("Sum of vector:", sum_v, "\n")
Sum of vector: 30
>
> # Mean of vector
> mean_v <- mean(v)
> cat("Mean of vector:", mean_v, "\n")
Mean of vector: 6
>
> # Product of vector
> prod_v <- prod(v)
> cat("Product of vector:", prod_v, "\n")
Product of vector: 3840
>
> |
```

```
Values
  c              cplx [1:6] 0+0i 0+0i 0+0i ...
  chr            chr [1:6] "" "" "" "" "" ""
  l              logi [1:6] FALSE FALSE FALSE FALSE FALSE FALSE
  mean_v         6
  prod_v         3840
  sum_v          30
  v              num [1:5] 2 4 6 8 10
  x              num [1:6] 0 0 0 0 0 0
  x              num [1:5] 5 9 2 3 8 51 NA
```

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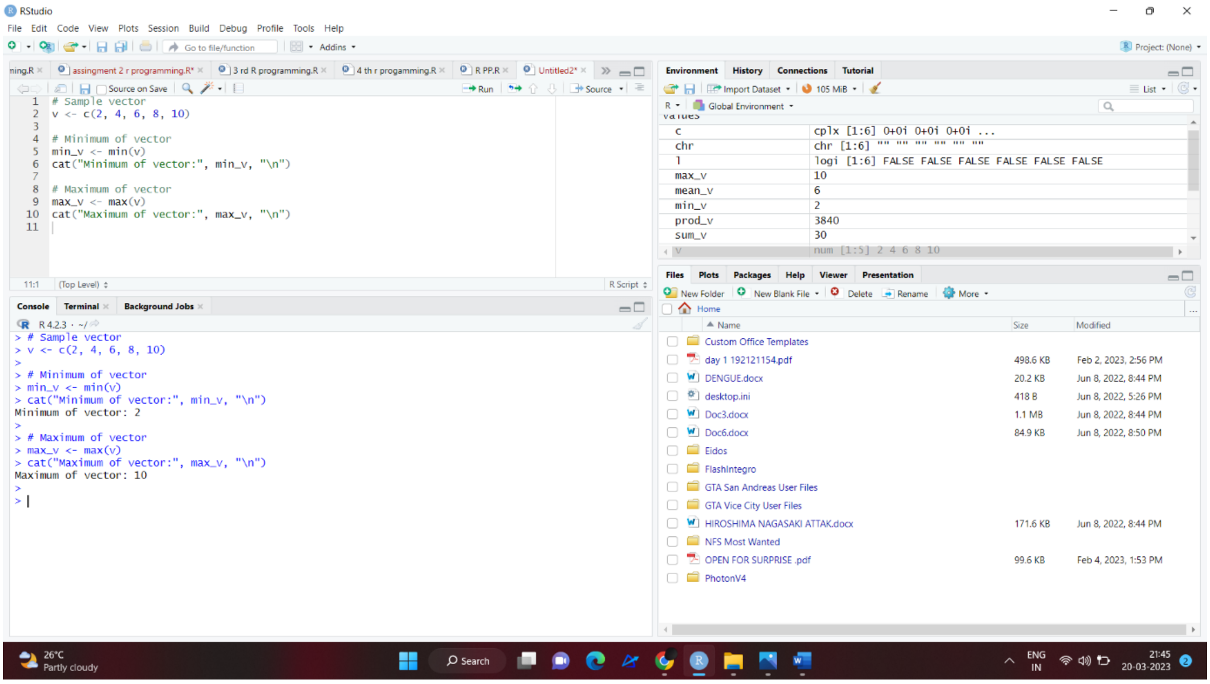
Write a R program to find the minimum and the maximum of a Vector 4.



```r
# Sample vector
v <- c(2, 4, 6, 8, 10)

# Minimum of vector
min_v <- min(v)
cat("Minimum of vector:", min_v, "\n")

# Maximum of vector
max_v <- max(v)
cat("Maximum of vector:", max_v, "\n")
```

```
> # Sample vector
> v <- c(2, 4, 6, 8, 10)
>
> # Minimum of vector
> min_v <- min(v)
> cat("Minimum of vector:", min_v, "\n")
Minimum of vector: 2
>
> # Maximum of vector
> max_v <- max(v)
> cat("Maximum of vector:", max_v, "\n")
Maximum of vector: 10
>
> |
```

```
Values
  c          cplx [1:6] 0+0i 0+0i 0+0i ...
  chr        chr [1:6] "" "" "" "" "" ""
  l          logi [1:6] FALSE FALSE FALSE FALSE FALSE FALSE
  max_v      10
  mean_v     6
  min_v      2
  prod_v     3840
  sum_v      30
  v          num [1:5] 2 4 6 8 10
```

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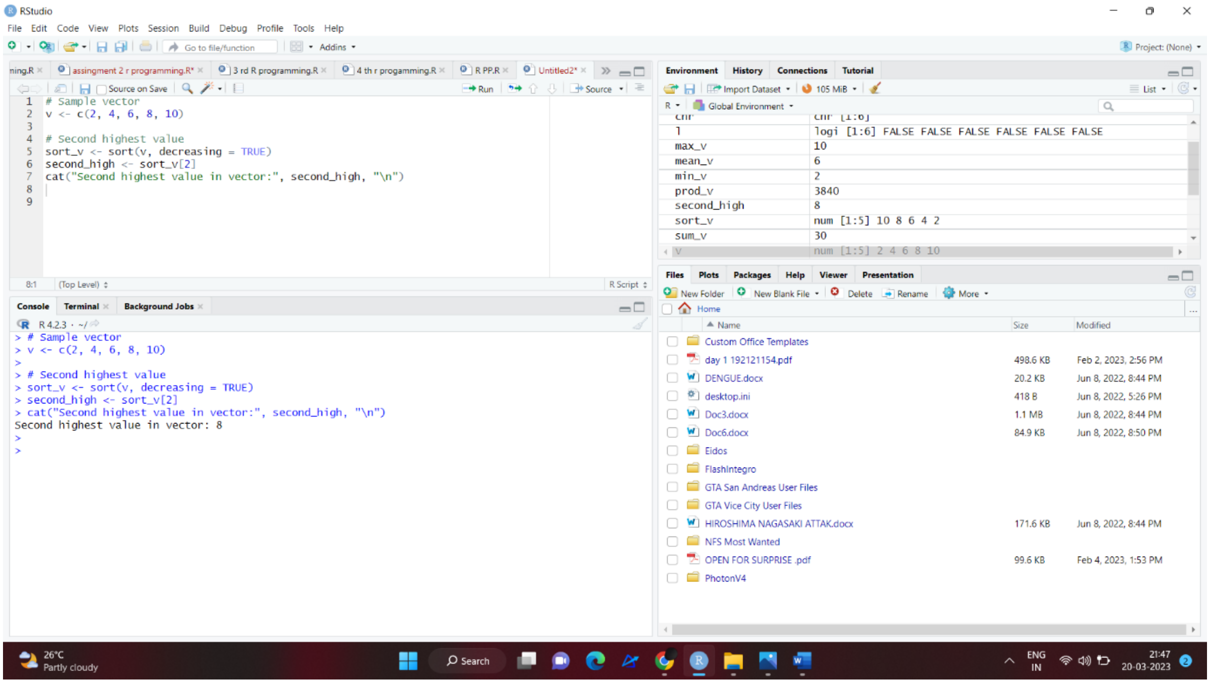
Write a R program to find second highest value in a given vector



```r
# Sample vector
v <- c(2, 4, 6, 8, 10)

# Second highest value
sort_v <- sort(v, decreasing = TRUE)
second_high <- sort_v[2]
cat("Second highest value in vector:", second_high, "\n")
```

```
> # Sample vector
> v <- c(2, 4, 6, 8, 10)
>
> # Second highest value
> sort_v <- sort(v, decreasing = TRUE)
> second_high <- sort_v[2]
> cat("Second highest value in vector:", second_high, "\n")
Second highest value in vector: 8
>
>
```

```
  chr        chr [1:6]
  l          logi [1:6] FALSE FALSE FALSE FALSE FALSE FALSE
  max_v      10
  mean_v     6
  min_v      2
  prod_v     3840
  second_high 8
  sort_v     num [1:5] 10 8 6 4 2
  sum_v      30
  v          num [1:5] 2 4 6 8 10
```

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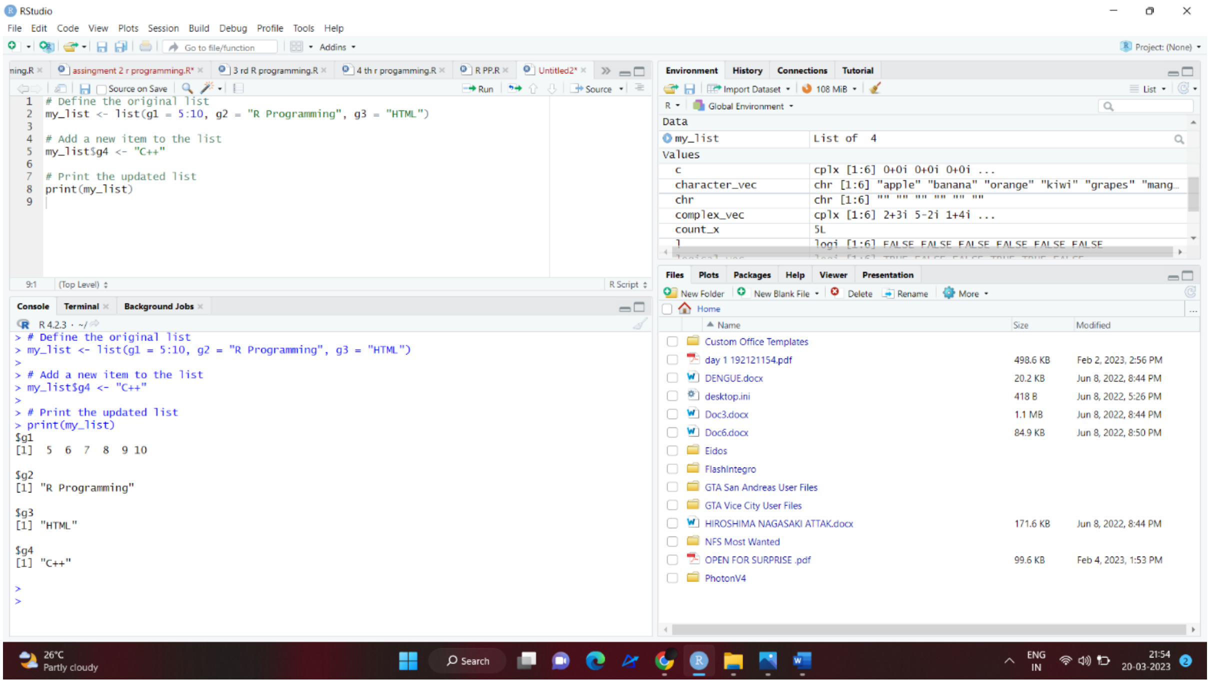
5. Write a R program to add a new item g4 = &quot;C++&quot; to a given list.

Sample list: (g1 = 5:10, g2 = &quot;R Programming&quot;, g3 = &quot;HTML&quot;).



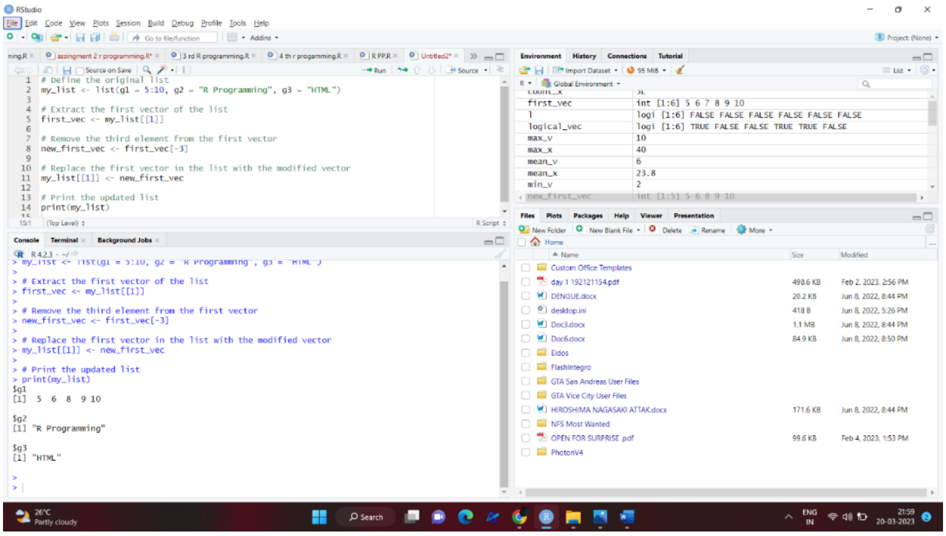
```
# Define the original list
my_list <- list(g1 = 5:10, g2 = "R Programming", g3 = "HTML")

# Add a new item to the list
my_list$g4 <- "C++"

# Print the updated list
print(my_list)
```

```
> # Define the original list
> my_list <- list(g1 = 5:10, g2 = "R Programming", g3 = "HTML")
>
> # Add a new item to the list
> my_list$g4 <- "C++"
>
> # Print the updated list
> print(my_list)
$g1
[1]  5  6  7  8  9 10

$g2
[1] "R Programming"

$g3
[1] "HTML"

$g4
[1] "C++"

>
>
```

```
Data
my_list          List of  4
Values
c                cplx [1:6] 0+0i 0+0i 0+0i ...
character_vec    chr [1:6] "apple" "banana" "orange" "kiwi" "grapes" "mang…
chr              chr [1:6] "" "" "" "" "" ""
complex_vec      cplx [1:6] 2+3i 5-2i 1+4i ...
count_x          5L
l                logi [1:6] FALSE FALSE FALSE FALSE FALSE FALSE
```

6. Write a R program to extract all elements except the third element of the first vector of a given list.

Sample list: (g1 = 5:10, g2 = &quot;R Programming&quot;, g3 = &quot;HTML&quot;)



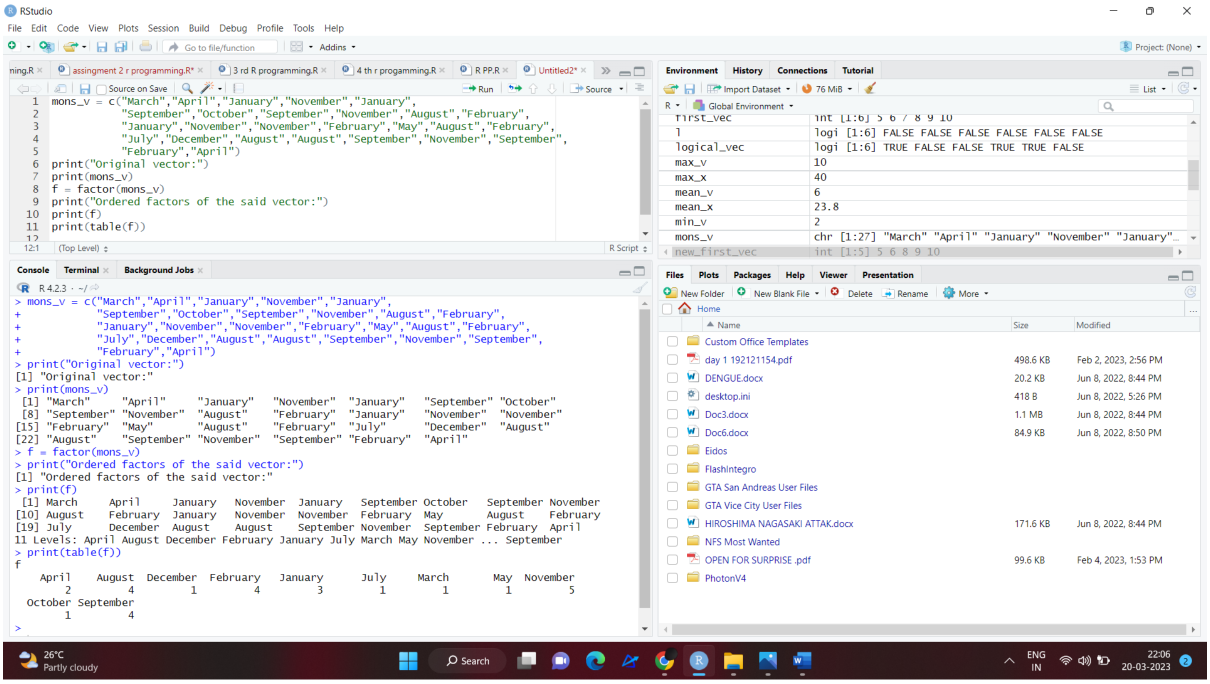
```
# Define the original list
my_list <- list(g1 = 5:10, g2 = "R Programming", g3 = "HTML")

# Extract the first vector of the list
first_vec <- my_list[[1]]

# Remove the third element from the first vector
new_first_vec <- first_vec[-3]

# Replace the first vector in the list with the modified vector
my_list[[1]] <- new_first_vec

# Print the updated list
print(my_list)
```

```
> my_list <- list(g1 = 5:10, g2 = "R Programming", g3 = "HTML")
>
> # Extract the first vector of the list
> first_vec <- my_list[[1]]
>
> # Remove the third element from the first vector
> new_first_vec <- first_vec[-3]
>
> # Replace the first vector in the list with the modified vector
> my_list[[1]] <- new_first_vec
>
> # Print the updated list
> print(my_list)
$g1
[1]  5  6  8  9 10

$g2
[1] "R Programming"

$g3
[1] "HTML"

>
> |
```

```
count_x          5L
first_vec        int [1:6] 5 6 7 8 9 10
l                logi [1:6] FALSE FALSE FALSE FALSE FALSE FALSE
logical_vec      logi [1:6] TRUE FALSE FALSE TRUE TRUE FALSE
max_v            10
max_x            40
mean_v           6
mean_x           23.8
min_v            2
new_first_vec    int [1:5] 5 6 8 9 10
```

7. Write a R program to create an ordered factor from data consisting of the

names of months .



```r
mons_v = c("March","April","January","November","January",
           "September","October","September","November","August","February",
           "January","November","November","February","May","August","February",
           "July","December","August","August","September","November","September",
           "February","April")
print("Original vector:")
print(mons_v)
f = factor(mons_v)
print("Ordered factors of the said vector:")
print(f)
print(table(f))
```

```
> mons_v = c("March","April","January","November","January",
+            "September","October","September","November","August","February",
+            "January","November","November","February","May","August","February",
+            "July","December","August","August","September","November","September",
+            "February","April")
> print("Original vector:")
[1] "Original vector:"
> print(mons_v)
 [1] "March"     "April"     "January"   "November"  "January"   "September" "October"
 [8] "September" "November"  "August"    "February"  "January"   "November"  "November"
[15] "February"  "May"       "August"    "February"  "July"      "December"  "August"
[22] "August"    "September" "November"  "September" "February"  "April"
> f = factor(mons_v)
> print("Ordered factors of the said vector:")
[1] "Ordered factors of the said vector:"
> print(f)
 [1] March     April     January   November  January   September October   September November
[10] August    February  January   November  November  February  May       August    February
[19] July      December  August    August    September November  September February  April
11 Levels: April August December February January July March May November ... September
> print(table(f))
f
    April    August  December  February   January      July     March       May  November
        2         4         1         4         3         1         1         1         5
  October September
        1         4
>
```

```
first_vec      int [1:6] 5 6 7 8 9 10
l              logi [1:6] FALSE FALSE FALSE FALSE FALSE FALSE
logical_vec    logi [1:6] TRUE FALSE FALSE TRUE TRUE FALSE
max_v          10
max_x          40
mean_v         6
mean_x         23.8
min_v          2
mons_v         chr [1:27] "March" "April" "January" "November" "January"…
new_first_vec  int [1:5] 5 6 8 9 10
```

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