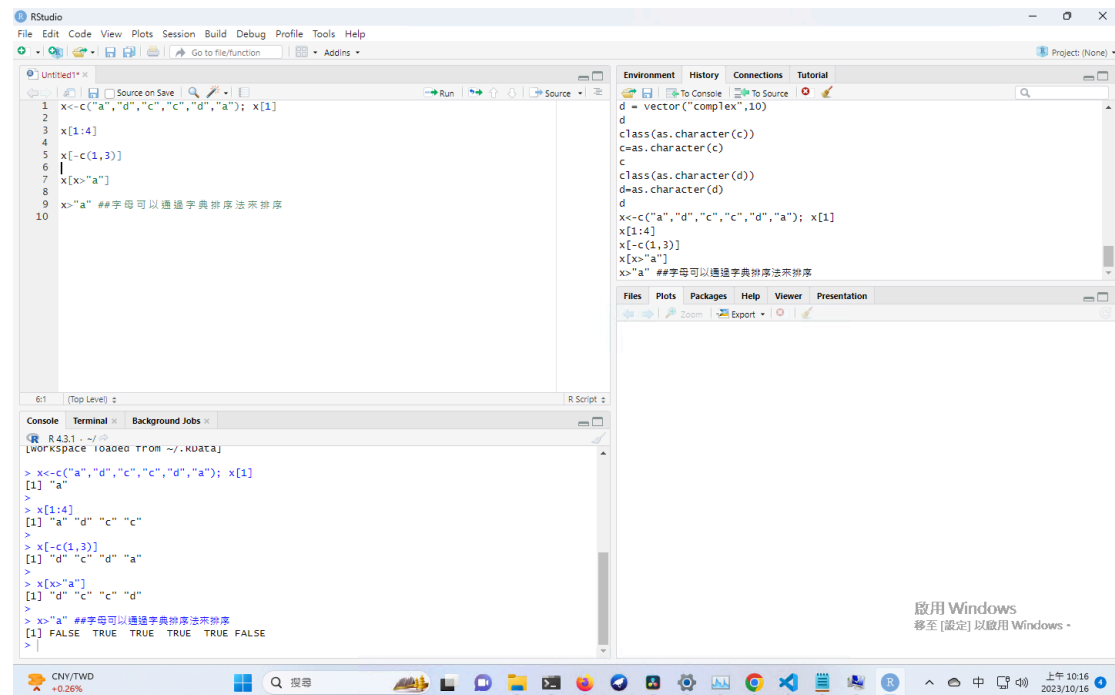


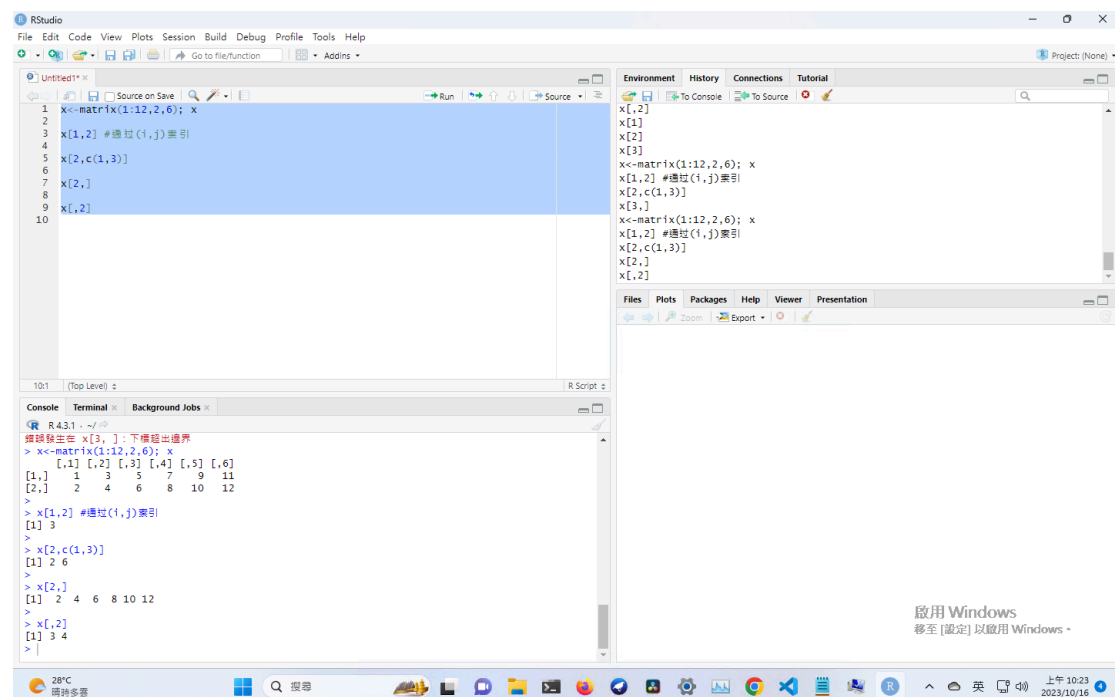
取子集-向量



```
1 x<-c("a","d","c","c","d","a"); x[1]
2
3 x[1:4]
4
5 x[-c(1,3)]
6
7 x[x>"a"]
8
9 x>"a" ##字母可以通过字典序法来排序
10
```

```
> x<-c("a","d","c","c","d","a"); x[1]
[1] "a"
>
> x[1:4]
[1] "a" "d" "c" "c"
>
> x[-c(1,3)]
[1] "d" "c" "d" "a"
>
> x[x>"a"]
[1] "d" "c" "c" "d"
>
> x>"a" ##字母可以通过字典序法来排序
[1] FALSE TRUE TRUE TRUE FALSE
>
```

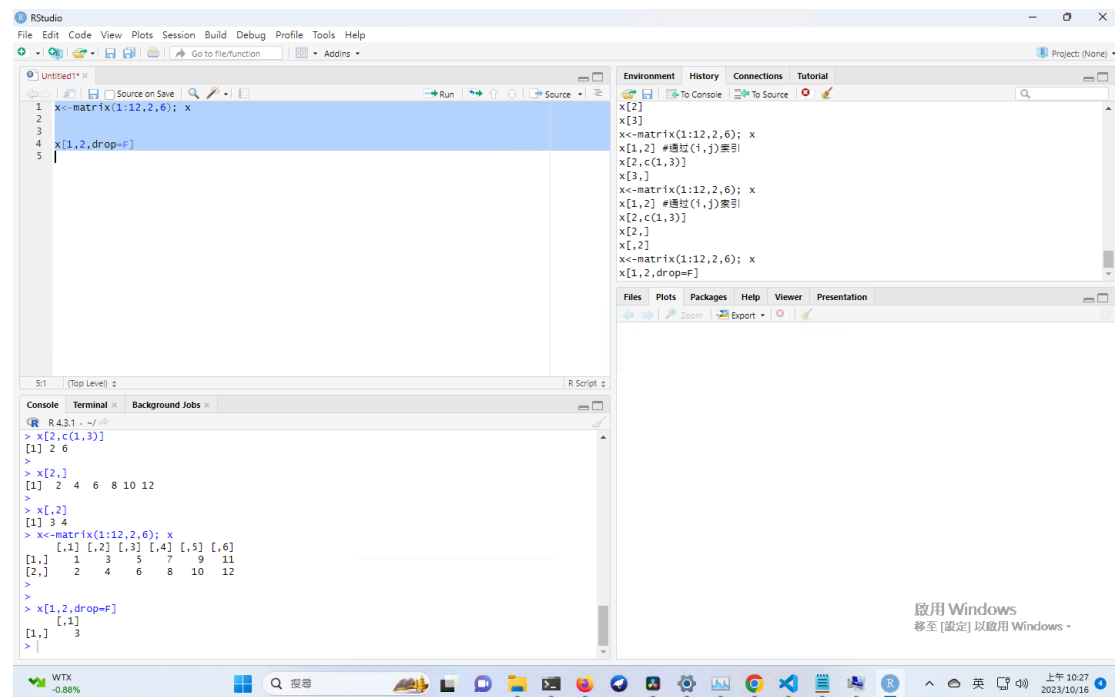
取子集-矩阵、数据框



```
1 x<-matrix(1:12,2,6); x
2
3 x[1,2] #通过(i,j)索引
4
5 x[2,c(1,3)]
6
7 x[2,]
8
9 x[,2]
10
```

```
> x<-matrix(1:12,2,6); x
     [,1] [,2] [,3] [,4] [,5] [,6]
[1,]    1    3    5    7    9   11
[2,]    2    4    6    8   10   12
>
> x[1,2] #通过(i,j)索引
[1] 3
>
> x[2,c(1,3)]
[1] 2 6
>
> x[2,]
[1] 2 4 6 8 10 12
>
> x[,2]
[1] 3 4
>
```

取子集-矩陣、數據框



This screenshot shows the RStudio interface with a script editor, console, and environment pane. The script editor contains the following code:

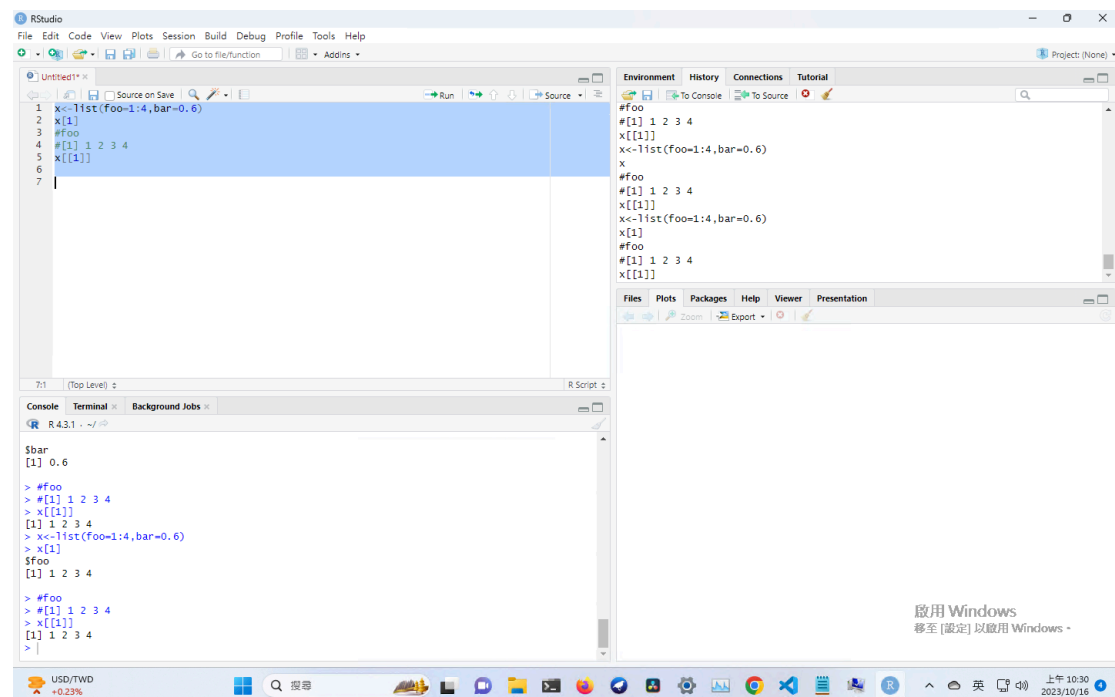
```
1 x<-matrix(1:12,2,6); x
2
3
4 x[1,2,drop=F]
5
```

The console shows the output of these commands:

```
> x[2,c(1,3)]
[1] 2 6
>
> x[2,]
[1] 2 4 6 8 10 12
>
> x[,2]
[1] 3 4
> x<-matrix(1:12,2,6); x
      [,1] [,2] [,3] [,4] [,5] [,6]
[1,]    1    3    5    7    9   11
[2,]    2    4    6    8   10   12
>
> x[1,2,drop=F]
      [,1]
[1,]    3
>
```

The environment pane on the right shows the objects created:

```
X[2]
X[3]
x<-matrix(1:12,2,6); x
x[1,2] #通过(1,j)索引
x[2,c(1,3)]
x[3,]
x<-matrix(1:12,2,6); x
x[1,2] #通过(1,j)索引
x[2,c(1,3)]
x[2,]
x[,2]
x<-matrix(1:12,2,6); x
x[1,2,drop=F]
```



This screenshot shows the RStudio interface with a script editor, console, and environment pane. The script editor contains the following code:

```
1 x<-list(foo=1:4,bar=0.6)
2 x[1]
3 #foo
4 #x[1] 1 2 3 4
5 x[[1]]
6
7
```

The console shows the output of these commands:

```
$bar
[1] 0.6
> #foo
> #x[1] 1 2 3 4
> x[[1]]
[1] 1 2 3 4
> x<-list(foo=1:4,bar=0.6)
> x[1]
$foo
[1] 1 2 3 4
> #foo
> #x[1] 1 2 3 4
> x[[1]]
[1] 1 2 3 4
>
```

The environment pane on the right shows the objects created:

```
#foo
#x[1] 1 2 3 4
x[[1]]
x<-list(foo=1:4,bar=0.6)
x
#foo
#x[1] 1 2 3 4
x[[1]]
x<-list(foo=1:4,bar=0.6)
x[1]
#foo
#x[1] 1 2 3 4
x[[1]]
```

取子集-列表

The screenshot shows the RStudio interface with a script editor on the left and an environment pane on the right. The script editor contains the following code:

```
1 x<-list(foo=1:4,bar=0.6)
2 x[1]
3 #foo
4 #[1] 1 2 3 4
5 x[[1]]
6
7 x[\"bar\"]
8
9 x[[\"bar\"]]
10
11 x$bar
12
```

The environment pane on the right shows the objects created in the script:

```
x<-list(foo=1:4,bar=0.6)
x[1]
#foo
#[1] 1 2 3 4
x[[1]]
x<-list(foo=1:4,bar=0.6)
x[1]
#foo
#[1] 1 2 3 4
x[[1]]
x[\"bar\"]
x[[\"bar\"]]
x$bar
```

The console at the bottom shows the output of the script:

```
> #foo
> #[1] 1 2 3 4
> x[[1]]
[1] 1 2 3 4
>
> x[\"bar\"]
$bar
[1] 0.6
>
> x[[\"bar\"]]
[1] 0.6
>
> x$bar
[1] 0.6
>
```

取子集-名字索引

The screenshot shows the RStudio interface with a script editor on the left and an environment pane on the right. The script editor contains the following code:

```
1 x<-list(a=1:4,b=0.6,c=\"hello\")
2 name<-\"a\"
3 x[name]
4 x$name
5 x$a
6
```

The environment pane on the right shows the objects created in the script:

```
#[1] 1 2 3 4
x[[1]]
x[\"bar\"]
x[[\"bar\"]]
x$bar
x<-list(a=1:4,b=0.6,c=\"hello\")
x[c(1,3)]
x[c(\"a\", \"c\")]
x<-list(a=1:4,b=0.6,c=\"hello\")
name<-\"a\"
x[name]
x$name
x$a
```

The console at the bottom shows the output of the script:

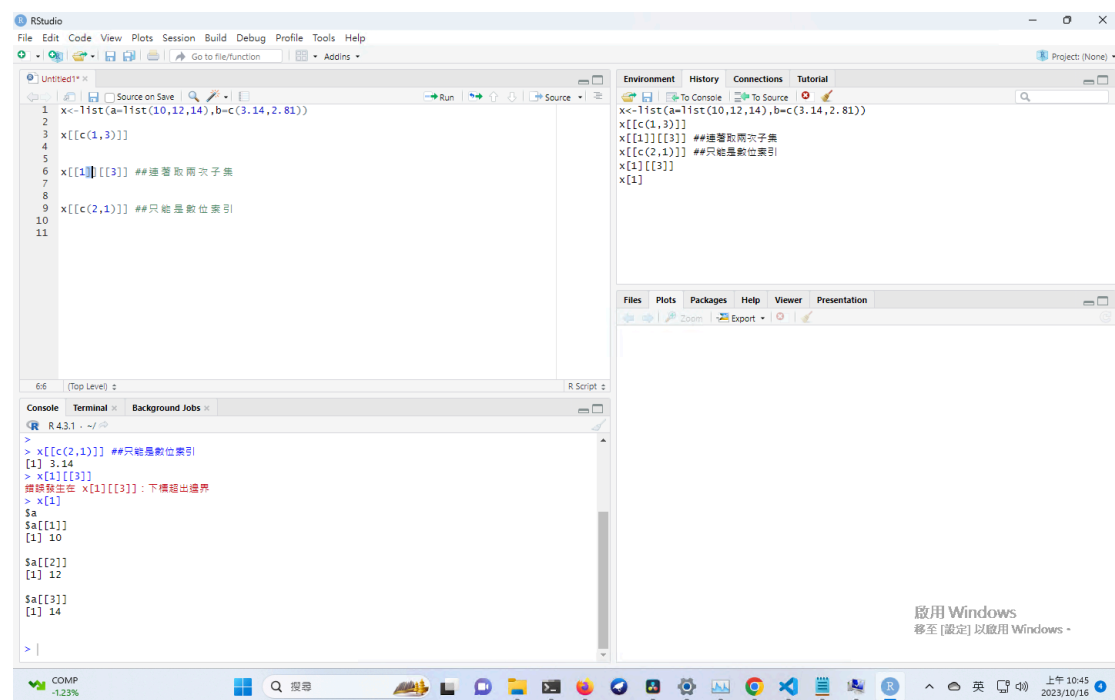
```
> x[c(\"a\", \"c\")]
$a
[1] 1 2 3 4

$c
[1] \"hello\"

> x<-list(a=1:4,b=0.6,c=\"hello\")
> name<-\"a\"
> x[name]
$a
[1] 1 2 3 4

> x$name
NULL
> x$a
[1] 1 2 3 4
>
```

取子集-特殊用法



The screenshot shows an RStudio session. The script editor contains the following code:

```
1 x<-list(a=list(10,12,14),b=c(3,14,2.81))
2
3 x[[c(1,3)]]
4
5
6 x[[1]][[3]] ##這等於兩次子集
7
8
9 x[[c(2,1)]] ##只能是數位索引
10
11
```

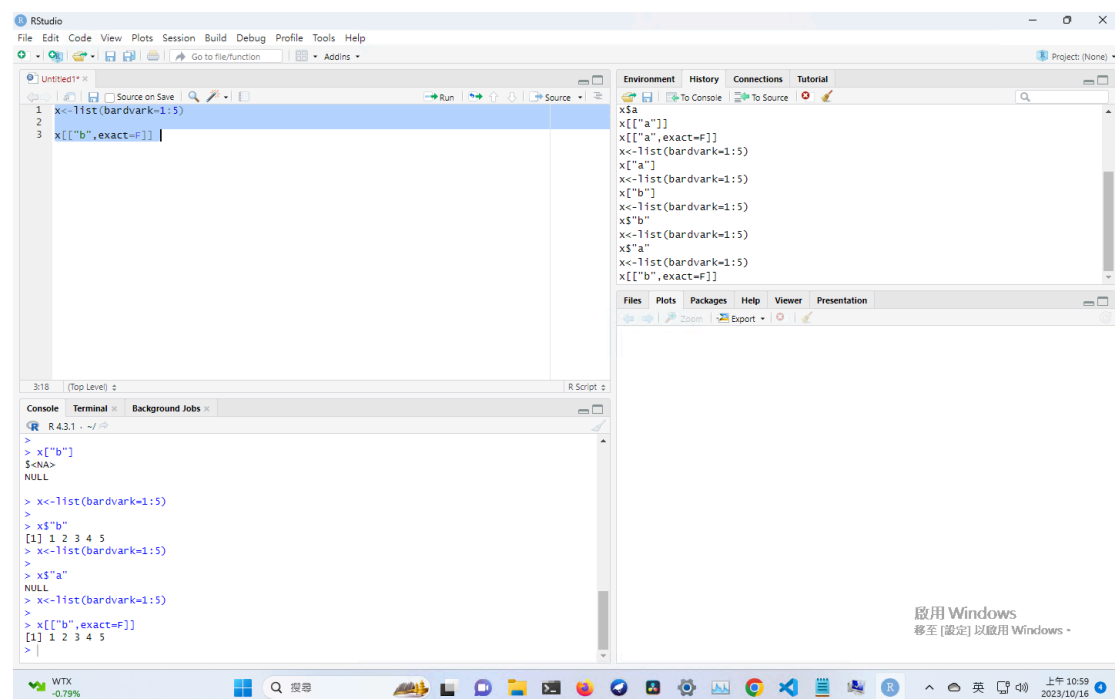
The console shows the execution of the code:

```
> x[[c(2,1)]] ##只能是數位索引
[1] 3.14
> x[[1]][[3]]
錯誤發生在 x[[1]][[3]] : 下標超出邊界
> x[1]
$a
$a[[1]]
[1] 10
$a[[2]]
[1] 12
$a[[3]]
[1] 14
> |
```

The Environment pane shows the objects created:

```
x<-list(a=list(10,12,14),b=c(3,14,2.81))
x[[c(1,3)]]
x[[1]][[3]] ##這等於兩次子集
x[[c(2,1)]] ##只能是數位索引
x[1][[3]]
x[1]
```

取子集-特殊用法



The screenshot shows an RStudio session. The script editor contains the following code:

```
1 x<-list(bardvark=1:5)
2
3 x[["b",exact=F]]
```

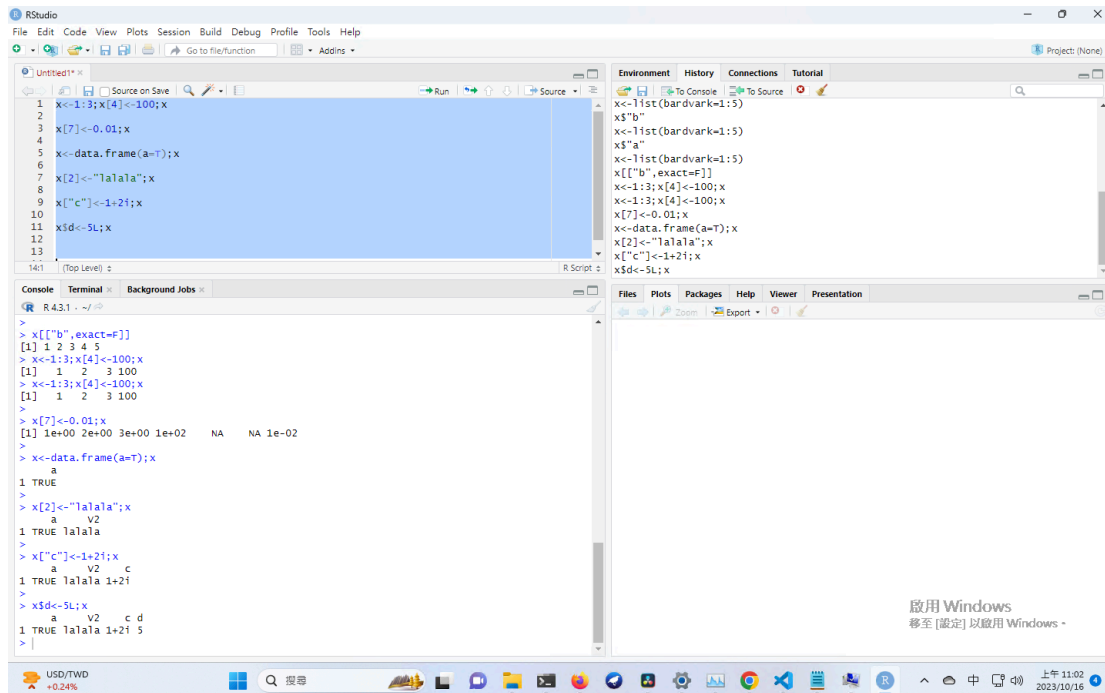
The console shows the execution of the code:

```
> x[["b"]]
$<NA>
NULL
> x<-list(bardvark=1:5)
>
> x$b
[1] 1 2 3 4 5
> x<-list(bardvark=1:5)
>
> x$a
NULL
> x<-list(bardvark=1:5)
>
> x[["b",exact=F]]
[1] 1 2 3 4 5
> |
```

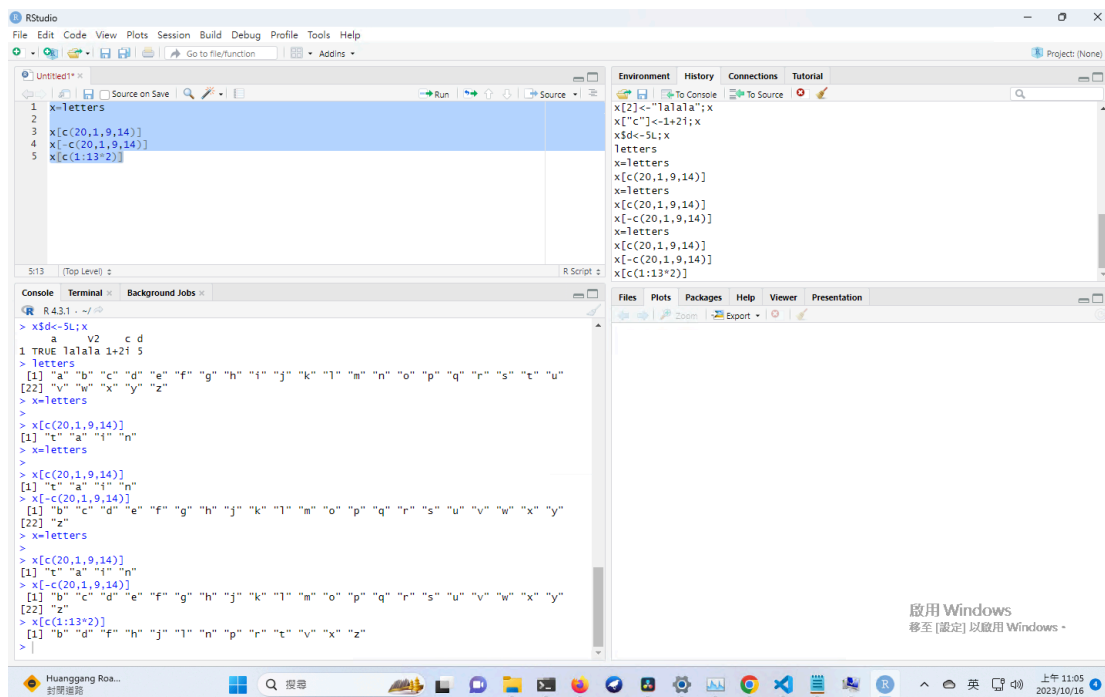
The Environment pane shows the objects created:

```
x$a
x[["a"]]
x[["a",exact=F]]
x<-list(bardvark=1:5)
x[["a"]]
x<-list(bardvark=1:5)
x[["b"]]
x<-list(bardvark=1:5)
x$b
x<-list(bardvark=1:5)
x$a
x<-list(bardvark=1:5)
x[["b",exact=F]]
```

生成新的元素



Practice1



Practice 2

The screenshot shows the RStudio interface with the following components:

- Source Editor:** Contains R code for creating a data frame, subsetting it, and applying row and column names.
- Console:** Displays the output of the R code, including the creation of the data frame, subsetting results, and the final data frame with row and column names.
- Environment:** Shows the objects in the environment, including the data frame created.

R Code (Source Editor):

```
1 x<-as.data.frame(matrix(1:25,5,5,dimnames=list(letters[1:5],letters[22:26])))
2 x
3 x[2:3,2:4]
4 x[1:2+2,2*(1:3)-1]
5 x[rownames(x)=="c"&rownames(x)<="e",]
6 x[rownames(x)=="c"&rownames(x)<="e",colnames(x)="x"&colnames(x)<="z"]
7 x["o"]=TRUE;x
```

Console Output:

```
R 4.3.1 ~>
v w x y z
a 1 6 11 16 21
b 2 7 12 17 22
c 3 8 13 18 23
d 4 9 14 19 24
e 5 10 15 20 25
> x[2:3,2:4]
  w x y
b 7 12 17
c 8 13 18
> x[1:2+2,2*(1:3)-1]
v x z
b 2 12 22
d 4 14 24
> x[rownames(x)=="c"&rownames(x)<="e",]
v w x y z
c 3 8 13 18 23
d 4 9 14 19 24
e 5 10 15 20 25
> x[rownames(x)=="c"&rownames(x)<="e",colnames(x)="x"&colnames(x)<="z"]
x y z
c 13 18 23
d 14 19 24
e 15 20 25
> x["o"]=TRUE;x
v w x y z o
a 1 6 11 16 21 TRUE
b 2 7 12 17 22 TRUE
c 3 8 13 18 23 TRUE
d 4 9 14 19 24 TRUE
e 5 10 15 20 25 TRUE
> |
```

Environment:

```
x<-as.data.frame(matrix(1:25,5,5,dimnames=list(letters[1:5],letters[22:26])))
x
x[2:3,2:4]
x[1:2+2,2*(1:3)-1]
x[rownames(x)=="c"&rownames(x)<="e",]
x[rownames(x)=="c"&rownames(x)<="e",colnames(x)="x"&colnames(x)<="z"]
x["o"]=TRUE;x
```