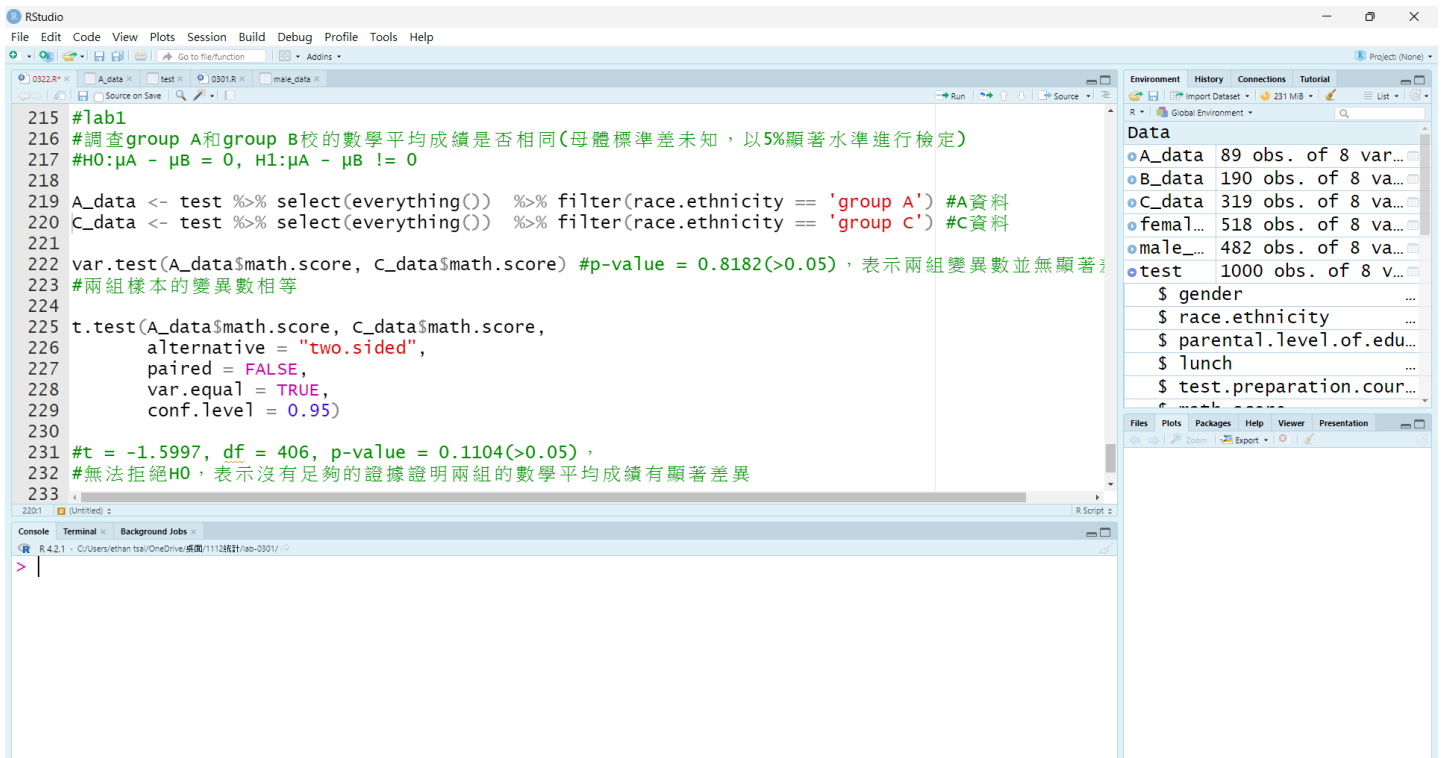
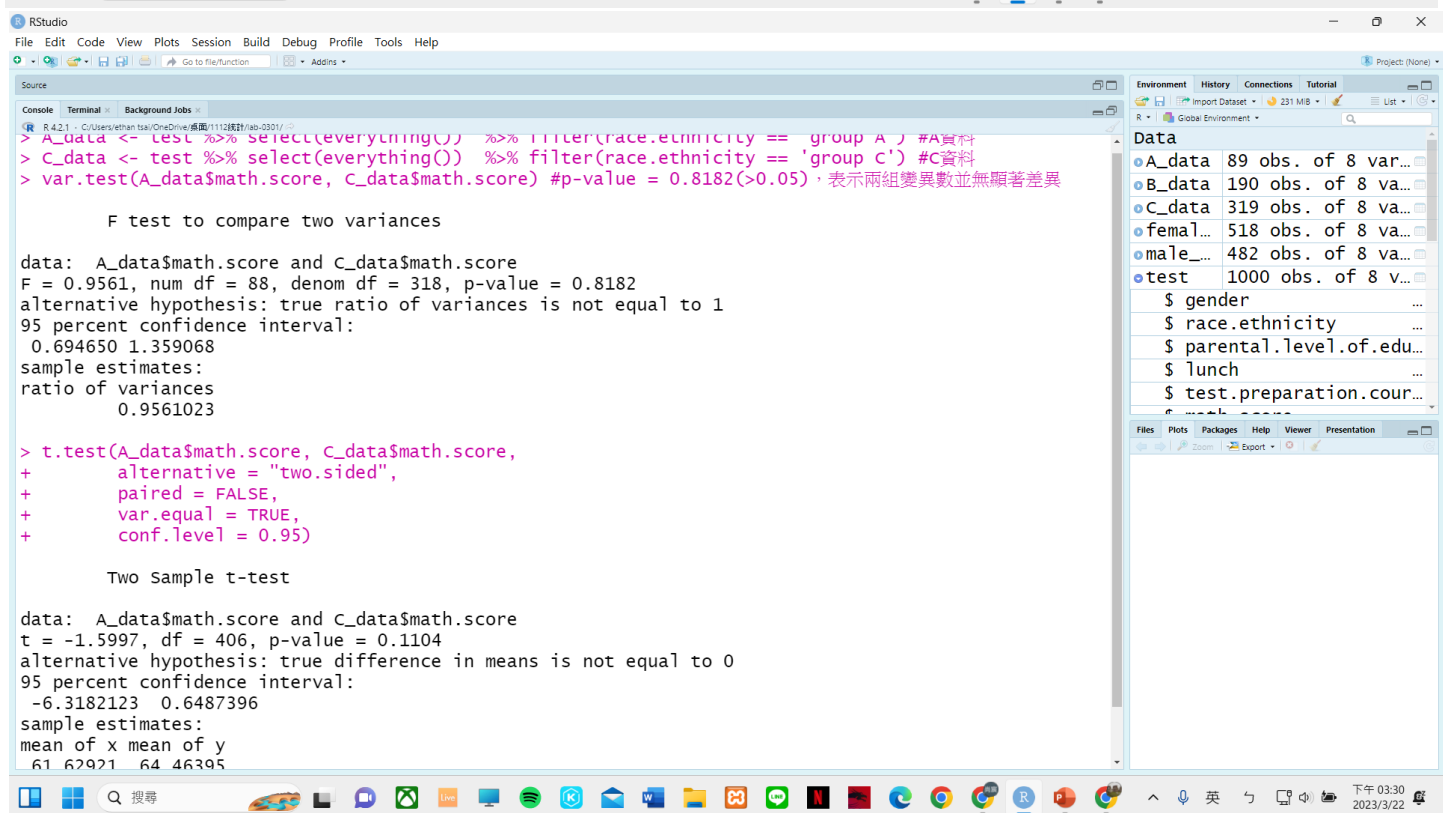


1.



```
215 #lab1
216 #調查group A和group B校的數學平均成績是否相同(母體標準差未知，以5%顯著水準進行檢定)
217 #H0:μA - μB = 0, H1:μA - μB != 0
218
219 A_data <- test %>% select(everything()) %>% filter(race.ethnicity == 'group A') #A資料
220 C_data <- test %>% select(everything()) %>% filter(race.ethnicity == 'group C') #C資料
221
222 var.test(A_data$math.score, C_data$math.score) #p-value = 0.8182(>0.05)，表示兩組變異數並無顯著差異
223 #兩組樣本的變異數相等
224
225 t.test(A_data$math.score, C_data$math.score,
226         alternative = "two.sided",
227         paired = FALSE,
228         var.equal = TRUE,
229         conf.level = 0.95)
230
231 #t = -1.5997, df = 406, p-value = 0.1104(>0.05)，
232 #無法拒絕H0，表示沒有足夠的證據證明兩組的數學平均成績有顯著差異
233
```



```
> A_data <- test %>% select(everything()) %>% filter(race.ethnicity == 'group A') #A資料
> C_data <- test %>% select(everything()) %>% filter(race.ethnicity == 'group C') #C資料
> var.test(A_data$math.score, C_data$math.score) #p-value = 0.8182(>0.05)，表示兩組變異數並無顯著差異

F test to compare two variances

data: A_data$math.score and C_data$math.score
F = 0.9561, num df = 88, denom df = 318, p-value = 0.8182
alternative hypothesis: true ratio of variances is not equal to 1
95 percent confidence interval:
 0.694650 1.359068
sample estimates:
ratio of variances
 0.9561023

> t.test(A_data$math.score, C_data$math.score,
+         alternative = "two.sided",
+         paired = FALSE,
+         var.equal = TRUE,
+         conf.level = 0.95)

Two Sample t-test

data: A_data$math.score and C_data$math.score
t = -1.5997, df = 406, p-value = 0.1104
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -6.3182123  0.6487396
sample estimates:
mean of x mean of y
 61.62921  64.46395
```

#t = -1.5997, df = 406, p-value = 0.1104(>0.05) ,

#無法拒絕 H0，表示沒有足夠的證據證明兩組的數學平均成績有顯著差異

2.

The image displays two screenshots of an RStudio session, showing the execution of a 2-sample test for equality of proportions with continuity correction.

First Screenshot:

```

236
237 #tab2
238
239 #假設我們的資料集為"樣本資料", 我們想透過檢定得知"有無午餐補助"的閱讀成績高於70分的比例是否有差異
240 #H0:P男 - P女 = 0, H1:P男 - P女 != 0
241
242 luns_data <- test %>% select(everything()) %>% filter(lunch == 'standard') #A資料
243 lunf_data <- test %>% select(everything()) %>% filter(lunch == 'free/reduced') #B資料
244
245 p1 <- length(luns_data$reading.score[luns_data$reading.score > 70]) #無補助成績大於70
246 p2 <- length(lunf_data$reading.score[lunf_data$reading.score > 70]) #有補助成績大於70
247
248 n1 <- length(luns_data$reading.score) #所有A成績
249 n2 <- length(lunf_data$reading.score) #所有B成績
250
251 p <- c(p1, p2) #兩樣本的p
252 n <- c(n1,n2) #兩樣本的n
253
254 prop.test(p, n, alternative = "two.sided",
255           conf.level = 0.95)
256
257 #p-value = 4.456e-8(<0.05), 拒絕H0, 表示有足夠證據證明有無午餐補助的閱讀成績高於70分的比例有顯著
258

```

Console output:

```

2-sample test for equality of proportions with continuity correction

data:  p out of n
X-squared = 29.94, df = 1, p-value = 4.456e-08
alternative hypothesis: two.sided
95 percent confidence interval:

```

Second Screenshot:

```

> luns_data <- test %>% select(everything()) %>% filter(lunch == 'standard') #A資料
> lunf_data <- test %>% select(everything()) %>% filter(lunch == 'free/reduced') #B資料
> p1 <- length(luns_data$reading.score[luns_data$reading.score > 70]) #無補助成績大於70
> p2 <- length(lunf_data$reading.score[lunf_data$reading.score > 70]) #有補助成績大於70
> n1 <- length(luns_data$reading.score) #所有A成績
> n2 <- length(lunf_data$reading.score) #所有B成績
> p <- c(p1, p2) #兩樣本的p
> n <- c(n1,n2) #兩樣本的n
> prop.test(p, n, alternative = "two.sided",
+           conf.level = 0.95)
+

```

Console output:

```

2-sample test for equality of proportions with continuity correction

data:  p out of n
X-squared = 29.94, df = 1, p-value = 4.456e-08
alternative hypothesis: two.sided
95 percent confidence interval:
 0.1175543 0.2482935
sample estimates:
 prop 1    prop 2 
0.5519380 0.3690141

```

The Environment pane on the right shows the following objects:

Object	Class	Attributes
c3	num	[1:35] 61 81 ...
c4	num	[1:35] 81 73 ...
fem_m...	int	[1:518] 72 69...
large...	int	[1:300] 30 78...
large...	int	[1:250] 36 62...
man_m...	int	[1:482] 47 76...
n	int	[1:2] 645 355
n1	645L	
n2	355L	
p	int	[1:2] 356 131
p1	356L	
p2	131L	

#p-value = 4.456e-8(<0.05), 拒絕 H0, 表示有足夠證據證明有無午餐補助的閱讀成績高於 70 分的比例有顯著差異