

# 期中考前實習講演

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## 概念複習：資料初步處理

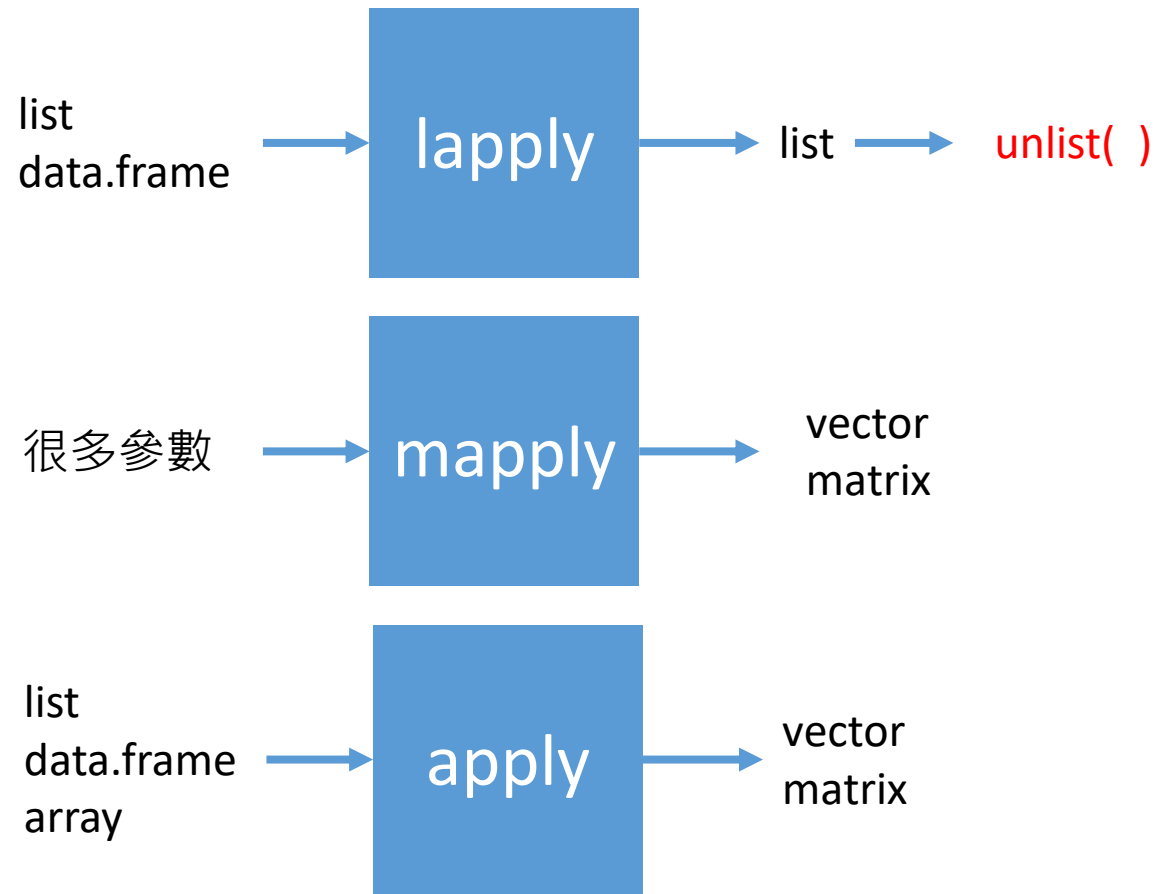
- `which(T/F)` \*判斷式
- `which.max(x)`      `which(x==max(x))`
- `substring(text, first, last)`
- `strsplit(x,split)`
- `xtabs(value~group_1+group_2+....)`
- Q: `xtabs` 如果只要算個數呢？  
A: `xtabs(~group_1+group_2+....)`

## 概念複習：apply

- lapply(LIST,FUN)
- mapply(FUN,arg1,arg2,.....)
- apply (X, **MARGIN**, FUN)

**MARGIN**: 1 by row, 2 by column

```
> M
      [,1] [,2] [,3] [,4]
[1,]    1    3    5    7
[2,]    2    4    6    8
> apply(M,1,sum)
[1] 16 20
> apply(M,2,sum)
[1]  3  7 11 15
```



## 概念複習：left\_join

- left\_join()

1. 確認兩欄的格式要一樣（事先型別轉換）

- factor→numeric

- as.numeric(as.character(x))

2. 配對的兩欄名稱不同怎麼辦？

left\_join(x, y, by = c("name.x" = "name.y"))

```
> x
  id name
1  1  甲
2  2  乙
3  3  丙

> y
  id2 name2
1   1     A
2   2     B
3   4     C
```

```
> left_join(x,y, by = c("id" = "id2"))
```

```
  id name name2
1  1  甲     A
2  2  乙     B
3  3  丙  <NA>
```

- x都被保留
- 只在x→NA值
- 只在y→消失

```
> full_join(x,y, by = c("id" = "id2"))
```

```
  id name name2
1  1  甲     A
2  2  乙     B
3  3  丙  <NA>
4  4 <NA>     C
```

- x, y 都被保留
- 只在其中一者→NA值

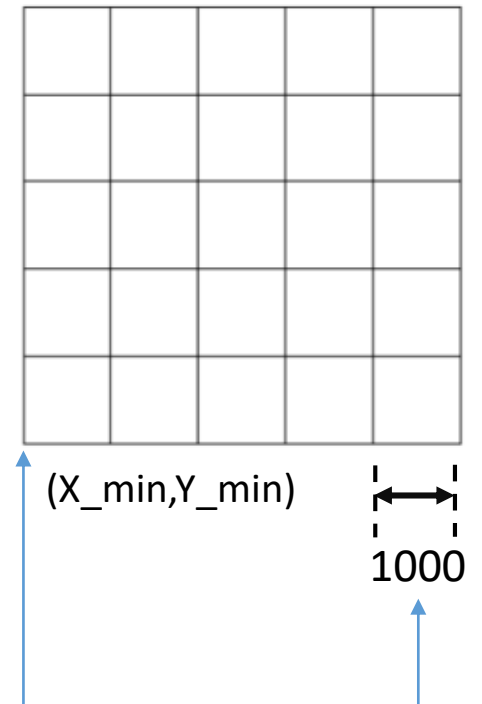
# 概念複習：polygons

- `poly.areas(polygon)`
- `poly.counts(points, polygons)`

```
> poly.counts  
function (pts, polys)  
colSums(gContains(polys, pts, byid = TRUE))  
<environment: namespace:GISTools>
```

`gContains`(polygons, points, byid=T)

- `GridTopology(cellcentre.offset, cellsize, cells.dim)`  
`c(bb[1,1]-200,bb[2,1]-200), c(1000,1000), c(5,5)`



# 概念複習：GISTools

- `glIntersection(sp1,sp2,byid=T)`
- `A=glIntersection(sp1,sp2,byid=T)`

## 1. `names(A)` or `rownames(A)`

"123 1"  
"1 20"  
"2 26"

→ `strsplit()` →

Result: N list  
Each list has two id.

[[1]]  
[1] "1" "285"

[[2]]  
[1] "2" "287"

## 2. `X_id` & `Y_id`

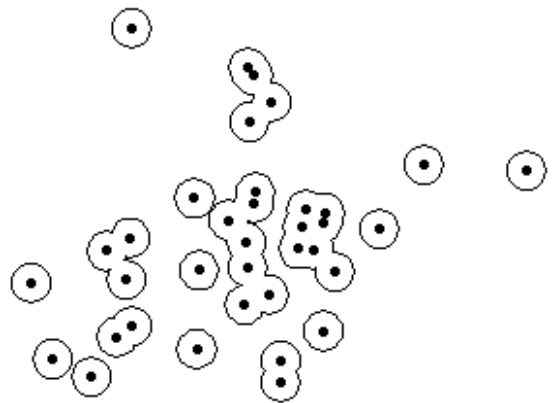
(1) `ans=unlist` → 1 285 2 287  
`X.id=Y.id=c()`  
`x=1`  
`for (i in`  
`seq(1,length(ans,2)) {`  
`X.id[x]<-ans[i]`  
`x=x+1 }`

(2) `result=lapply(ans, function(x) x[1])`  
`X.id=unlist(result)`

# 概念複習：GISTools

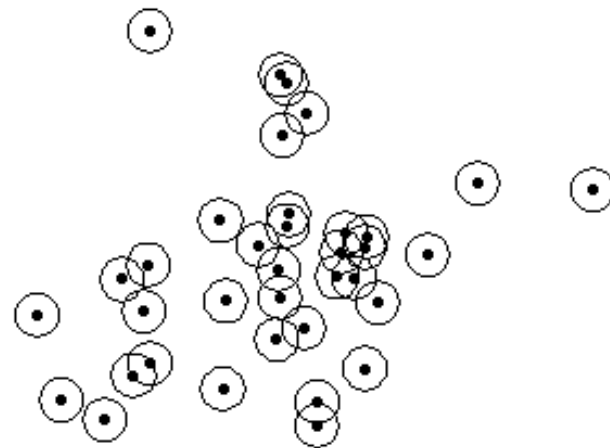
- `gBuffer(sp,width, byid=T)`

`gBuffer(sp,width=1000)`



n points→only 1 polygons

`gBuffer(sp,width=1000, byid=T)`

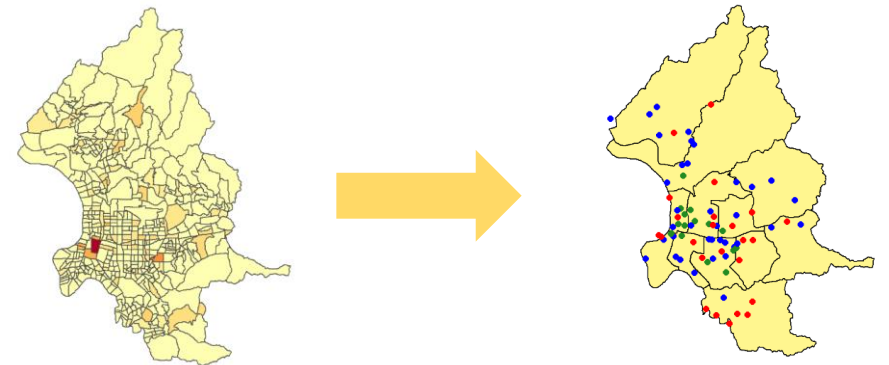


n points→n polygons

- `gUnaryUnion(sp,id=group)`

Taipei\_Town

=`gUnaryUnion(Taipei_Vill,Taipei_Vill@data$TOWN)`



# 概念複習：GISTools

- gCentroid(sp, byid=T)
- gDistance(sp, sp2=NULL, byid=T)

		sp						
		0	1	2				
sp2	1	128517.49	126907.54	120264.35	1	FALSE	FALSE	FALSE
	2	123956.87	122449.94	116278.79	2	FALSE	FALSE	FALSE
	3	29738.99	38177.79	46334.56	3	TRUE	TRUE	TRUE
	4	243555.73	239797.71	224000.15	4	FALSE	FALSE	FALSE
	5	47813.73	55654.62	63906.59	5	TRUE	TRUE	TRUE

- gWithinDistance(sp, sp2=NULL, dist, byid=T)
- gWithin() = gContains() = gWithinDistance(..., dist=0)



## 概念複習：面量圖

- # 間距 `auto.shading()`
- # 繪圖 `choropleth( polygon, value, shading )`
- # 圖名 `title()`
- # 圖例 `choro.legend()`
- # 比例尺 `map.scale()`
- # 指北針 `north.arrow()`

題目：去年期中考題 Q1-4，共4題

規定：可互相討論（但不可問助教）

實習時間：2 hours

期中考加分： $+20 * (\text{答對比例})$

分段部份給分

1. 6.5 (1.5+2+1.5+1.5)
2. 6 (2+2+2)
3. 3 (1.5+1.5)
4. 4.5 (1.5+1.5+1.5)