Mid Term

1. Question 1

> rep(1:3, each=3)

[1] 1 1 1 2 2 2 3 3 3

> seq(1, 10, by=2)

[1] 1 3 5 7 9

> order(10:1, decreasing=F)

[1] 10 9 8 7 6 5 4 3 2 1

> print((1:4)>2&(1:4)%%2==0)

[1] FALSE FALSE FALSE TRUE

> print((1:4)>2&&(1:4)%%2==0)

[1] FALSE

> x = c(1:5, NA);

> print( mean(x) );

[1] NA

2. Question 2

> sex = c(1,1,1,1,1,1,2,2,2,2);

> graduate = c(1,0,1,0,1,0,0,0,0,1);

> score=c(9:1, NA)

> zz = data.frame(sex, graduate, score)

> zz

sex graduate score

1 1 1 9

2 1 0 8

3 1 1 7

4 1 0 6

5 1 1 5

6 1 0 4

7 2 0 3

8 2 0 2

9 2 0 1

10 2 1 NA

> apply(zz[-1,], 2, max)

sex graduate score

2 1 NA

> zz[zz[,3]>7,]

sex graduate score

1 1 1 9

2 1 0 8

NA NA NA NA

> which.max(zz$score)

[1] 1

> zz[order(zz["graduate"],zz["score"]),]

sex graduate score

9 2 0 1

8 2 0 2

7 2 0 3

6 1 0 4

4 1 0 6

2 1 0 8

5 1 1 5

3 1 1 7

1 1 1 9

10 2 1 NA

> subset(zz, zz["sex"]==1)

sex graduate score

1 1 1 9

2 1 0 8

3 1 1 7

4 1 0 6

5 1 1 5

6 1 0 4

> tapply(zz$score, zz$graduate, mean, na.rm=T)

0 1

4 7

> apply(zz[-10, ], 1, function(x){ sum(x) })

1 2 3 4 5 6 7 8 9

11 9 9 7 7 5 5 4 3

3. Question3

> mylist=list(sex = c(1,1,1,1,2,2,2,2,2,2),

+ smoking = c(1,0,1,0,1,0,0,0,1,1),

+ age=c(21:30))

> mylist

$sex

[1] 1 1 1 1 2 2 2 2 2 2

$smoking

[1] 1 0 1 0 1 0 0 0 1 1

$age

[1] 21 22 23 24 25 26 27 28 29 30

> lapply(mylist, function(kk){ kk\*3 })

$sex

[1] 3 3 3 3 6 6 6 6 6 6

$smoking

[1] 3 0 3 0 3 0 0 0 3 3

$age

[1] 63 66 69 72 75 78 81 84 87 90

> sapply(mylist, max)

sex smoking age

2 1 30

> (mylist$sex-mylist$smoking)^3

[1] 0 1 0 1 1 8 8 8 1 1

4. Question 4

> zz=matrix(c(c(1,2,NA), c(3,4,5), 6:9), nrow = 2, ncol = 5, byrow = TRUE)

> zz

[,1] [,2] [,3] [,4] [,5]

[1,] 1 2 NA 3 4

[2,] 5 6 7 8 9

> zz\_sum\_row<- apply(zz, 1, sum)

> zz\_sum\_row

[1] NA 35

> zz\_avg\_col<- apply(zz, 2, mean)

> zz\_avg\_col

[1] 3.0 4.0 NA 5.5 6.5

> zz\_avg\_col<- apply(zz, 2, mean, na.rm = TRUE)

> zz\_avg\_col

[1] 3.0 4.0 7.0 5.5 6.5

> zz\_sum\_row<- apply(zz, 1, sum, na.rm = TRUE)

> zz\_sum\_row

[1] 10 35

5. Question 5

> geneExpr=data.frame(gene=LETTERS[1:10],

+ expr1=c(2.1, 4.5, 6.8, 7.9, 8.1, 5.0, 4.6, 3.2, 3.5, 7.8),

+ expr2=c(6.1, 4.2, 2.8, 0.9, 0.1, 3.0, 2.6, 8.2, 3.4, 6.8))

> geneExpr

gene expr1 expr2

1 A 2.1 6.1

2 B 4.5 4.2

3 C 6.8 2.8

4 D 7.9 0.9

5 E 8.1 0.1

6 F 5.0 3.0

7 G 4.6 2.6

8 H 3.2 8.2

9 I 3.5 3.4

10 J 7.8 6.8

> counter<-0

> for (i in 1:length(geneExpr[,1])) {

+ if (geneExpr[i,2]<=7){

+ counter<-counter+1

+ }

+ }

> print(counter)

[1] 7