```
for file in *; do
  file_tmp=${file}_tmp
  mv "$file" "$file_tmp"

  rollno=`head $file_tmp -n 2 | tail -n 1`
  completed=`grep -n "COMPLETED" $file_tmp | cut -d ":" -f 1`
  total=`wc -l $file_tmp | cut -d " " -f 1`

  head -n $((completed-1)) $file_tmp > $file
  echo "LEVEL:${level[$rollno]}" >> $file
  tail -n $((total-completed+1)) $file_tmp >> $file
done
```
C. ✔

```
for file in *; do
  file_tmp=${file}_tmp
  mv "$file" "$file_tmp"

  rollno=`head $file_tmp -n 2 | tail -n 1`
  completed=`grep -n "COMPLETED" $file_tmp | cut -d ":" -f 1`
  total=`wc -l $file_tmp | cut -d " " -f 1`

  head -n $((completed-1)) $file_tmp > $file
  echo "LEVEL:${level[$rollno]}" > $file
  tail -n $((total)) $file_tmp > $file
done
```
D. ✖

Sem1 CT

Number of Questions : 11

Section Marks : 50

Question Number : 212 Question Type : MCQ

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "SEMESTER 1: COMPUTATIONAL THINKING"

ARE YOU SURE YOU HAVE TO WRITE EXAM FOR THIS SUBJECT?
CROSS CHECK YOUR HALL TICKET TO CONFIRM THE SUBJECTS TO BE WRITTEN.

(IF IT IS NOT THE CORRECT SUBJECT, PLS CHECK THE SECTION AT THE TOP FOR THE SUBJECTS REGISTERED BY YOU)

Options :

A. ✔ YES

B. ✖ NO

Question Number : 213 Question Type : MCQ

Correct Marks : 0

Question Label : Multiple Choice Question

Scores

RowNo	Name	Gender	DateOfBirth	CityTown	Mathematics	Physics	Chemistry	Total
0	Bhuvanesh	M	7 Nov	Erode	68	64	78	210
			■ ■ ■					
29	Naveen	M	13 Oct	Vellore	72	66	81	219

Words

RowNo	Word	PartOfSpeech	LetterCount
0	It	Pronoun	2
		■ ■ ■	
64	cane.	Noun	4

Library

RowNo	Name	Author	Genre	Language	Pages	Publisher	Year
0	Igniting Minds	Kalam	Nonfiction	English	178	Penguin	2002
			■ ■ ■				
29	Malgudi Days	Narayan	Fiction	English	150	Indian Thought	1943

Olympics

Seq. No.	Name	Gender	Nationality	Host country	Year	Sport	Medal
0	Karnam Malleswari	F	Indian	Australia	2000	Weightlifting	Bronze
				- - -			
49	Michael Phelps	M	American	China	2008	Swimming	Gold

Three sample cards out of 30 for Shopping Bills dataset

Item List

SV Stores — Srivatsan ①

Item	Category	Qty	Price	Cost
Carrots	Vegetables/Food	1.5	50	75
Soap	Toiletries	4	32	128
Tomatoes	Vegetables/Food	2	40	80
Bananas	Vegetables/Food	8	8	64
Socks	Footwear/Apparel	3	56	168
Curd	Dairy/Food	0.5	32	16
Milk	Dairy/Food	1.5	24	36
				567

Sun General — Vignesh ⑭

Item	Category	Qty	Price	Cost
Phone Charger	Utilities	1	230	230
Razor Blades	Grooming	1	12	12
Razor	Grooming	1	45	45
Shaving Lotion	Grooming	0.8	180	144
Earphones	Electronics	1	210	210
Pencils	Stationery	3	5	15
				656

Big Bazaar — Sudeep ②

Item	Category	Qty	Price	Cost
Baked Beans	Canned/Food	1	125	125
Chicken Wings	Meat/Food	0.5	600	300
Cocoa powder	Canned/Food	1	160	160
Capsicum	Vegetables/Food	0.8	180	144
Tie	Apparel	2	390	780
Clips	Household	0.5	32	16
				1525

Options :

A. ✔ Useful Data has been mentioned above.

B. ✖ This data attachment is just for a reference & not for an evaluation.

Question Type : COMPREHENSION

Question Numbers : (214 to 219)

Question Label : Comprehension

Let **L** be a non-empty list, and **D** be a non-empty Dictionary. Choose whether the statements given in the subquestions are true or false:

Sub questions

Question Number : 214 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Elements of **L** can be Dictionaries

Options :

A. ✔ TRUE

B. ✖ FALSE

Question Number : 215 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Let **a** be a key of Dictionary **D**, then **a** is always an integer.

Options :

A. ✖ TRUE

B. ✔ FALSE

Question Number : 216 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

For keys **a** and **b** in **D**, if **a** ≠ **b** then **D[a]** ≠ **D[b]** is always True.

Options :

A. ✖ TRUE

B. ✔ FALSE

Question Number : 217 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

For keys **a** and **b** in **D**, **a** ≠ **b** is always True.

Options :

A. ✔ TRUE

B. ✖ FALSE

Question Number : 218 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

For a key **a** in **D**, **D**[**a**] can be a dictionary.

Options :

A. ✔ TRUE

B. ✖ FALSE

Question Number : 219 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Let **D** = { 3 : {'a': 5, 'b' : 4}, 5 : {'c' : 6}}, then the value of **D**['b'] is 4.

Options :

A. ✖ TRUE

B. ✔ FALSE

Question Number : 220 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the procedure **doSomething** given below. If **A** = [3, 4, 5, 3, 1, 9, 4, 6, 5, 9] and **B** = **doSomething(A)**.

```
1    Procedure doSomething(A)
2        outList = [first(A)]
3        foreach X  in rest(A) {
4            if (X ≠ first(A)) {
5                outList = outList ++ [X]
6            }
7        }
8        return (outList)
9    End doSomething
```

Choose the correct option.

Options :

A. ✔ **B** = [3, 4, 5, 1, 9, 4, 6, 5, 9]

B. ✖ **B** = [3, 4, 5, 1, 9, 6]

C. ✖ **B** = [1, 6]

D. ✖ **B** = [4, 1, 3, 4, 6, 5, 9]

Question Number : 221 Question Type : MCQ

Correct Marks : 4

Question Label : Multiple Choice Question

The following table contains information regarding authors from the "Library" dataset. Each row in the table corresponds to an author and list of publication years. There are **n** authors, each author is being assigned a unique index between 0 and **n−1**.

S.No	Author Name	Publication year
0	Kalam	[1998,..., 2015]
...	...	....
n − 1	Narayanan	[1935,..., 2001]

The table is represented by a dictionary named **authors**, with S.No as keys and lists of publication years as values. Assume that **authors** has already been computed. For example, we have: **authors**[0] = [1998,..., 2015]

isCommon(L1, L2) returns True if there are at least two common elements in lists **L1** and **L2**.

```
M = createMatrix (n, n)
foreach i in keys (authors) {
        foreach j in keys (authors) {
                if (i < j and isCommon(authors[i], authors[j])) {
                        M[i][j] = 1
                        M[j][i] = 1
                }
        }
}

A = { }
foreach i in rows (M) {
        count = 0
        foreach j in columns (M) {
                if (M[i][j] > 0) {
                        count = count + 1
                }
        }
        A[i]= count
}
```

What does an entry **A[i]** represent at the end of the execution of the pseudocode above?

Options :

A. ✳ Author **A[i]** has published books in **i** years

B. ✳ Author **i** has published books in **A[i]** years

C. ✳ Author **A[i]** has published at least two books in common years with **i** authors

D. ✔ Author **i** has published at least two books in common years with **A[i]** authors

Question Number : 222 Question Type : MCQ

Correct Marks : 4

Question Label : Multiple Choice Question

In a shop selling soft drinks, Ritvika wants to combine two soft drinks to see which combinations taste better. The drinks are labeled from 0 to $n - 1$. To keep track of these combinations, she creates a matrix **M**. For drink **i** and **j** such that **i** ≠ **j**, if the combination of **i** and **j** tastes good, then **M[i][j]** = 1, otherwise 0. **mostSuitable(M)** returns the list of drinks which are suitable for mixing

with the maximum number of drinks. Choose the correct code fragment.

```
Procedure mostSuitable(M)
        max = 0
        maxList = [ ]
        foreach i in rows(M) {
            k = 0
            *********************
            *     Fill the code     *
            *********************
        }
        return (maxList)
End mostSuitable
```

Options :

```
foreach j in columns(M) {
        k = k + M[i][j]
}
if (k == max) {
        maxList = maxList ++ [i]
}
if (k > max) {
        max = k
        maxList = [i]
}
```
A. ✔

```
foreach j in columns(M) {
        k = k + M[i][j]
}
if (k == max) {
        maxList = maxList ++ [i]
}
if (k < max) {
        max = k
        maxList = [i]
}
```
B. ✖

C. ✖

```
foreach j in columns(M) {
    k = k + M[i][j]
}
if (k == max) {
    maxList = [i]
}
if (k > max) {
    max = k
    maxList = maxList ++ [i]
}
```

```
foreach j in columns(M) {
    k = k + M[i][j]
}
if (k == max) {
    maxList = [i]
}
if (k < max) {
    max = k
    maxList = maxList ++ [i]
}
```

D. ✗

Question Type : COMPREHENSION

Question Numbers : (223 to 224)

Question Label : Comprehension

Consider the procedure given below.

```
Procedure eliminate (L1, L2)
    L3 = [ ], Found = False
    foreach i in L1 {
        foreach j in L2 {
            if (i == j) {
                Found = True
            }
        }
        if (not Found) {
            L3 = L3 ++ [i]
        }
        Found = False
    }
    return (L3)
End eliminate
```

If **L1** and **L2** are two lists, and **L** = **eliminate (L1, L2)**, then answer the given subquestions.

Sub questions

Question Number : 223 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

What will **L** represent?

Options :

A. ✻ It will contain all elements of **L2** that are not present in **L1**.

B. ✔ It will contain all elements of **L1** that are not present in **L2** .

C. ✻ It will contain the elements common to **L1** and **L2** .

D. ✻ It will contain the elements present in **L1** or **L2** but not both.

Question Number : 224 Question Type : MSQ

Correct Marks : 2

Question Label : Multiple Select Question

Which of the following option(s) is/are always correct? It is a Multiple Select Question (MSQ).
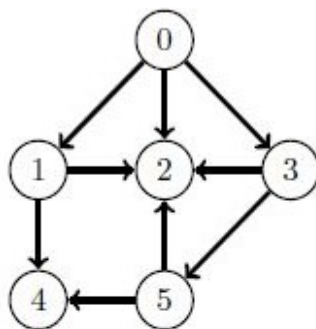
Options :

A. ✽ **length(L1) − length(L2) = length(L)**

B. ✽ **length(L1) > length(L2)**

C. ✔ **length(L1) ≥ length(L)**

D. ✽ **length(L2) ≤ length(L)**

Question Type : COMPREHENSION

Question Numbers : (225 to 226)

Question Label : Comprehension

Let M be the adjacency matrix of the graph G given below, where $M[i][j] = 1$ if there is an edge from i to j, otherwise 0.


```
1    Procedure countSomething(M, i, j)
2         count = 0
3         foreach k in rows(M) {
4             if (M[i][k] == 1 and M[k][j] == 1) {
5                 count = count + 1
6             }
7         }
8         return (count)
9    End countSomething
```

Based on the above information, answer the given subquestions.

Sub questions

Question Number : 225 Question Type : SA

Correct Marks : 3

Question Label : Short Answer Question

What will **countSomething**(**M**, 0, 2) return?

NOTE: Enter your answer to the nearest integer.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Question Number : 226 Question Type : SA

Correct Marks : 2

Question Label : Short Answer Question

If Line 2 is replaced by **count** = **M**[**i**][**j**], then what will **countSomething**(**M**, 0, 2) return?

NOTE: Enter your answer to the nearest integer.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3

Question Type : COMPREHENSION

Question Numbers : (227 to 228)

Question Label : Comprehension

The following pseudocode is executed using the "Words" dataset. Assume that words are arranged in increasing order of sequence number.

```
B = 10000
sList = [ ], wList = [ ]
while (Table 1 has more rows) {
        Read the first row X in Table 1
        Move X to Table 2
        wList = wList ++ [X.PartOfSpeech]
        if (X.Word ends with a full stop) {
                A = doSomething(wList)
                if (A < B) {
                        B = A
                }
                sList = sList ++ [wList]
                wList = [ ]
        }
}
Procedure doSomething(L)
        count = 0
        foreach p in L {
                if (p == "Noun") {
                        count = count + 1
                }
        }
        return(count)
End doSomething
```

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 227 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

What will **B** represent at the end of the execution?

Options :

A. ✱ Maximum number of nouns in a sentence across all sentences.

B. ✳ Total number of nouns across all sentences.

C. ✔ Minimum number of nouns in a sentence across all sentences.

D. ✳ Number of sentences having minimum number of nouns.

Question Number : 228 Question Type : MCQ

Correct Marks : 4

Question Label : Multiple Choice Question

What will **length(sList)** represent at the end of execution.

Options :

A. ✳ Total number of words in "Words" dataset

B. ✔ Total number of sentences in "Words" dataset

C. ✳ Total number of words with same part of speech in "Words" dataset

D. ✳ Total number of words with different part of speech in "Words" dataset

Question Type : COMPREHENSION

Question Numbers : (229 to 230)

Question Label : Comprehension

The following pseudocode is executed using the "Shopping Bills" dataset.

```
D = { }
while (Pile 1 has more cards) {
        Read the top card X in Pile 1
        foreach a in X.ItemList {
                if (isKey(D, a.Category)) {
                        if (isKey(D[a.Category], a.ItemName)) {
                                D[a.Category][a.ItemName] = D[a.Category][a.ItemName] ++ [a.Price]
                        }
                        else {
                                D[a.Category][a.ItemName] = [a.Price]
                        }
                }
                else {
                        D[a.Category] = { }
                        D[a.Category][a.ItemName] = [a.Price]
                }
        }
        Move card X to Pile 2
}
```

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 229 Question Type : MCQ

Correct Marks : 4

Question Label : Multiple Choice Question

What will each value **D[j][k]** represent at the end of the execution?

Options :

A. ✖ Price of item **j** of category **k** across all bills

B. ✖ Price of item **k** of category **j** across all bills

C. ✖ List of prices of item **j** of category **k** across all bills

D. ✔ List of prices of item **k** of category **j** across all bills

Question Number : 230 Question Type : MCQ

Correct Marks : 4

Question Label : Multiple Choice Question

Using the dictionary **D** created in the previous question, what will the value of **L** represent at the end of the execution of the pseudocode below?

```
A = 0, L = []
foreach i in keys(D) {
    foreach j in keys(D[i]) {
        data = findRange(D[i][j])
        B = first(data) - last(data)
        if (B == A) {
            L = L ++ [j]
        }
        if (B > A) {
            A = B
            L = [j]
        }
    }
}

Procedure findRange(Y)
    p = 0, q = 100000
    foreach k in Y{
        if (k > p) {
            p = k
        }
        if (k < q) {
            q = k
        }
    }
    return([p, q])
End findRange
```

Options :

A. ✷ List of items for which the difference between the highest and lowest price is the same

B. ✔ List of items for which the difference between the highest and lowest price is maximum

C. ✷ List of items for which the difference between the highest and lowest price is minimum

D. ✷ List of items with same price in all shops

Question Type : COMPREHENSION

Question Numbers : (231 to 232)

Question Label : Comprehension

The following pseudocode is executed using the "Shopping Bills" dataset. Procedure **similar(X, Y)** returns True if the difference between **X** and **Y** is less than 100.

```
A = { }
while (Pile 1 has more cards) {
        Read the top card X in Pile 1
        A[X.Seq_No] = [X.ShopName, X. Total]
        Move card X to Pile 2
}
n = length(keys(A))
S = CreateMatrix(n, n)
foreach i in keys(A) {
        foreach j in keys(A) {
                if (i < j and isPair(A[i], A[j])) {
                        S[i][j] = 1
                        S[j][i] = 1
                }
        }
}
Procedure isPair(P, Q)
        if (first(P) == first(Q) and similar(last(P), last(Q))) {
                return (True)
        }
        else {
                return (False)
        }
End isPair
```

A graph is constructed using matrix **S** created by the above pseudocode. Based on the given information answer the subquestions.

Sub questions

Question Number : 231 Question Type : MSQ

Correct Marks : 4

Question Label : Multiple Select Question

Choose the correct statement(s). It is a Multiple Select Question (MSQ).

Options :

A. ✖ For all i, j with $i \neq j$, $S[i][j] + S[j][i] = 1$

B. ✖ For all i, j with $i \neq j$, if $S[i][j] = 0$ then $S[j][i] = 1$

C. ✔ For all i, j with $i \neq j$, if $S[i][j] = 1$ then $S[j][i] = 1$

D. ✖ For all i, j with $i \neq j$, if $S[i][j] = 1$ then $S[j][i] = 0$

E. ✔ For all i, j with $i \neq j$, if $S[i][j] = 0$ then $S[j][i] = 0$

Question Number : 232 Question Type : MSQ

Correct Marks : 4

Question Label : Multiple Select Question

There will be an edge between bills **i** and **j** if:

It is a Multiple Select Question (MSQ).

Options :

A. ✔ The total bill amount of **i** is lower than the total bill amount of **j** by less than 100 and both bills are from the same shop.

B. ✔ The total bill amount of **i** is greater than the total bill amount of **j** by less than 100 and both bills are from the same shop.

C. ✖ The total bill amounts of bills **i** and **j** are same but both bills are from the different shops.

D. ✔ The total bill amounts of bills **i** and **j** are same and both bills are from the same shop.

Sem2 Maths2

Number of Questions :   6

Section Marks :   50