

We have a new table containing information of 1000 books for a library. In the procedure given below, the parameter **books** is list sorted in an ascending order based on the number of pages. Each element in **books** corresponds to a book from the library and is represented by a list [SeqNo, Pages]. **X** is a row from the table.

```
1  Procedure Insert(X, books)
2      sBooks = [ ]
3      inserted = False
4      foreach Y in books {
5          if (X.Pages <= last(Y) and not(inserted)) {
6              sBooks = sBooks ++ [[X.SeqNo, X.Pages]]
7              inserted = True
8          }
9          sBooks = sBooks ++ [Y]
10     }
11     if (not(inserted)) {
12         sBooks = sBooks ++ [[X.SeqNo, X.Pages]]
13     }
14     return (sBooks)
15 End Procedure Insert
```

Q1: **Z** is some arbitrary value containing a book's details. Consider the following code:

```
someBooks = [ ]
```

```
someBooks = Insert(Z, someBooks)
```

Which of the following lines in the procedure **Insert** will be executed during the above call? It is a Multiple Select Question (MSQ).

- ☐ Line 5
- ☐ Line 6
- ☐ Line 7
- ☐ Line 9
- ☐ Line 12
- ☐ No lines. An empty list cannot be passed as a parameter to the procedure.

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8          }  
9          sBooks = sBooks ++ [Y]  
10     }  
11     if (not(inserted)) {  
12         sBooks = sBooks ++ [[X.SeqNo, X.Pages]]  
13     }  
14     return (sBooks)  
15 End Procedure Insert
```

Q2: **Z** is a row in the table with the following data: **Z**.SeqNo is 12 and **Z**.Pages is 350.

What will be the contents of the list **someBooks** at the end of execution of the following code?

```
someBooks = [ [5, 220], [10, 350], [15, 350], [20, 400] ]
```

```
someBooks = Insert(Z, someBooks)
```

- [[5, 220], [10, 350], [15, 350], [20, 400]]
- [[5, 220], [12, 350], [10, 350], [15, 350], [20, 400]]
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15 End Procedure Insert
```

Q3: Execute the following pseudocode on the “Library” table. Which of the following statements are true after execution? It is a Multiple Select Question (MSQ).

```
books = [ ]  
while(Table 1 has more rows) {  
    Read top row X from Table 1  
    books = Insert(X, books)  
    Move X to Table 2  
}
```

- ☐ first(books) corresponds to a book having the least number of pages in the library.
- ☐ first(books) corresponds to a book having the most number of pages in the library.
- ☐ last(last(books)) is the most number of pages among all the books in the library.
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- ✓ last(first(books)) is the least number of pages among all the books in the library.