Arrays of Three or More Dimensions

An Example: Calendar

Note:
A 2D array is a collection of 1D arrays: each element in a 2D array is a 1D array

A 3D array is a collection of 2D arrays: each element in a 3D array is a 2D array

What is a 4D array?

1. Declare a 3D-array for a calendar: 12 month, 5 (incomplete weeks) in each month, and 7days in each week.

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```
int calendar [12][5][7];
```

2. Explain what does the following expression refer to?

```
int calendar [12][5][7];

calendar[0][2][1]
```

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```
int calendar [12][5][7];

calendar[0][2][1]    // January, third week, Monday
```

Note
It is an integer number, such as 13, if the year is 2020.

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	**13**	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

3. Explain what does the following expression refer to?

```
int calendar [12][5][7];

calendar[0][2]
```

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```
int calendar [12][5][7];

calendar[0][2]       // January, third week
```

Note
It is a 1D array, the third week in January

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	**13**	**14**	**15**	**16**	**17**	**18**
19	20	21	22	23	24	25
26	27	28	29	30	31	

4. Explain what does the following expression refer to?

```
int calendar [12][5][7];

calendar[0]
```

4. Explain what does the following expression refer to?

```
int calendar [12][5][7];

calendar[0]                    // January
```

Note
It is a 2D array, the first element in this 3D array

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
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What is a 4D array?
A 4D array is a collection of 3D arrays: each element in a 4D array is a 3D array
(like a box with two or more calendars)