15. **05-06 C3 What Does this Program Do – 2D Arrays**

Given array A below with A(1,1) = 3, what is printed when the following program is run?

```
S = 0
FOR I = 1 TO 3
        FOR J = 1 TO 5
                IF A(I,J)/2 = INT (A(I,J)/2)
                        THEN A(I,J) = A(I,J)/2
                        ELSE A(I,J) = A(I,J) + 1
        NEXT J
NEXT I
FOR I = 1 TO 3 STEP 2
        FOR J= 2 TO 5 STEP 3
                S = S + A(I,J)
        NEXT J
NEXT I
PRINT S
```

3	2	4	5	1
0	1	3	2	6
1	2	1	3	4

19. **06-07 C3 What Does this Program Do – 2D Arrays**

Given array A below with A(1,1) = −1, what is printed when the following program is run?

```
FOR I = 1 TO 4
        FOR J = 1 TO 4
                IF A(I,J)/2 = INT (A(I,J)/2)
                        THEN A(I,J) = A(I,J)/2
                        ELSE A(I,J) = A(I,J) + 1
                IF A(I,J) < 0
                        THEN A(I,J) = ABS(A(I,J))
                        ELSE A(I,J) = −1 * A(I,J)
        NEXT J
NEXT I
PRINT A(2,2) * A(3,3)
END
```

−1	2	1	0
−2	1	0	3
4	−3	1	2
1	3	−2	6

23. **07-08 C3 What Does this Program Do – 2D Arrays**

Given array A below, what is the final value of S after the program is run?
Remember A(1, 1) = 1

```
S = 0
for I = 1 to 4
        for J = 1 to 3
                if I ≤J  then A(I,J) = A(I,J)^2
                        else A(I,J) = int(A(I,J)/2)
                S = S + A(I,J)
        next J
next I
print S
end
```

1	2	3
2	4	6
3	6	9
4	8	12

27. **08-09 C3 What Does this Program Do – 2D Arrays**

What is printed when this program is run?

```
for I = 1 to 3
        for J = 1 to 3
                A(I,J) = I + J
                B(I,J) = I * J
                C(I,J) = A(I,J) + B(J,I)
        next J
next I
print C(1,1)+C(2,2)+C(3,3)
end
```

30. **09-10 C2 What Does this Program Do – 1D Arrays**

How many unique numbers were printed after this program was executed?
Data is 2, 9, 10, 12, 16, 20, 24, 30, 32, 36

```
FOR I = 1 TO 10
        INPUT A
        S = 0
        FOR N = 1 TO A/2
                IF A/N = INT(A/N) THEN S = S + N
        NEXT N
        IF S = A – 1 THEN PRINT A
NEXT I
END
```

31. **09-10 C3 What Does this Program Do – 2D Arrays**

After this program is executed, what is the largest value in array B?

```
for I = 1 to 4
        for J = 1 to 4
                A(I,J) = 2*I+J
        next J
next I
for I = 1 to 4
        for J = 1 to 4
                S = 0
                for K = 1 to A(I,J)
                        if A(I,J)/K = INT(A(I,J)/K) then S = S + K
                next K
                B(I,J)=S
        next J
next I
end
```

47. **13-14 C3 What Does this Program Do – 2D Arrays**

Given array A below, what is the final value of C after the program is run? Note: A(1,1) = 21.

```
C = O
FOR I = 1 TO 4
        FOR J = 1 TO 4
                IF A(I,J)/4 = INT(A(I,J)/4) THEN A(I,J)=A(I,J)/4
                IF A(I,J)/3 = INT(A(I,J)/3) THEN A(I,J)=A(I,J)/3
                IF A(I,J)/10 = INT(A(I,J)/10) THEN A(I,J)=A(I,J)/10
                IF A(I,J)/2 = INT(A(I,J)/2) THEN A(I,J)=A(I,J)/2
        NEXT J
NEXT I
FOR I = 4 TO 1 STEP -1
        FOR J = 1 TO 4
                IF A(I,J) = 1 THEN C = C + 1
        NEXT J
NEXT I
PRINT C
END
```

21	8	4	90
48	44	1	27
70	5	36	10
16	40	81	24

52. **14-15 C4 What Does this Program Do – 2D Arrays**

What value of NUM is printed?

```
DIM A(10,10)
FOR X = 1 TO 10
        FOR Y = 1 TO 10
                A(X,Y) = (X-1) * 10 + Y
        NEXT Y
NEXT X
FOR CNT=2 TO 10
        FOR X = CNT+1 TO 100
                R = INT(X/10)
                C = X – INT(X/10)
                IF A(R,C)/CNT=INT(A(R,C)/CNT)THEN
        NEXT X
NEXT CNT
FOR X = 1 TO 10
        FOR Y = 1 TO 10
                IF A(X,Y) != 0 THEN NUM = NUM + 1
        NEXT Y
NEXT X
PRINT NUM
```