

```

for(i=i+1; i < MAX_SIZE; i++)
{
    count++; // for j in range [i+1, MAX_SIZE-1]
    SWAP(a[i][j], a[j][i], temp);
    count = count + 3; // operations of SWAP macro
}
count++; // j = MAX_SIZE
}
count++; // i = MAX_SIZE - 1
}

```

b) Simplify the resulting function by eliminating statements

```

void transpose(int a[][MAX_SIZE])
{
    int i, j, temp;
    for(i=0; i < MAX_SIZE-1; i++)
    {
        count = count + 2;
        for(i=i+1 j=i+1; j < MAX_SIZE; j++)
        {
            count = count + 4;
        }
        count++;
    }
}

```

c) Determine the value of count when the function ends

$$\begin{aligned}
 \text{count} &= (2\text{MAX_SIZE} - 2) + \cancel{\text{MAX_SIZE}} + (\text{MAX_SIZE} - 1 + \text{MAX_SIZE} - 2 \\
 &\quad + \dots + 1) \times 4 + 1 = (2\text{MAX_SIZE} - 2) + \cancel{\text{MAX_SIZE}} \times \\
 &\quad \left((\text{MAX_SIZE} \times (\text{MAX_SIZE} - 1)) - \frac{\text{MAX_SIZE}(\text{MAX_SIZE} - 1)}{2} \right) \times 4 + 1 \\
 &= (2\text{MAX_SIZE} - 2) + \cancel{\text{MAX_SIZE}} (\text{MAX_SIZE})(\text{MAX_SIZE} - 1) \cdot 2 + 1 \\
 &= \cancel{(2\text{MAX_SIZE} - 2)} + \cancel{2\text{MAX_SIZE}(\text{MAX_SIZE}^2 - 2\text{MAX_SIZE} + 1)} \\
 &= \cancel{2\text{MAX_SIZE}} - \cancel{4\text{MAX_SIZE}^2} + 4\text{MAX_SIZE} - 1 \\
 &= 2\text{MAX_SIZE} - 2 + 2\text{MAX_SIZE}^2 - 2\text{MAX_SIZE} + 1 \\
 &= 2\text{MAX_SIZE}^2 - 1
 \end{aligned}$$