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| Given the following C code: |
| void initialize(double \*\*p) {  for (int i = 0; i < 5; i++)  \*(p + i) = new double[ i + 1 ];  }  int main() {  double \*p[10];  initialize(p + 3);  release(p);  } |
| 1. How many bytes are allocated at each line of main( ) ? 2. How memory are allocated by initialize( ) function in main( ) ? 3. Write release() function to avoid memory leak. |

Solve:

1. 10 \* sizeof(double) bytes

Initialize(p + 3): Do not allocate memory directly in the main function.

1. Initialize function allocates dynamic memory for pointer starting from p[3].

Initialize function:

- \*(p + i) = p[3 + i] (allocate from p[3] to p[7])

- new double[i + 1]: allocates dynamic array with i + 1 elements of type double

The total memory allocated is (1 + 2 + 3 + 4 + 5) \* sizeof(double) = 15 \* sizeof(double)

1. void release(double \*p[10]) {

for (int i = 0; i < 10; ++i)

if (p[i] != NULL) {

delete [] p[i];

p[i] = NULL;

}

}