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CSE333 HW2 Interface

```
typedef void(*APayloadFreeFnPtr)(APayload_t payload);
```

Function from client to free the data pointed to by APayload_t.

```
typedef char*(*APayloadSerializeFnPtr)(APayload_t payload);
```

Function from client to serialize an array element. The returned value (serialized form) must be valid JSON, and must be freed by the caller after use.

```
typedef APayload_t(*APayloadDeserializeFnPtr)(char* json);
```

Function from client to deserialize an array element.

```
Array2D AllocateArray2D(int rows, int columns);
```

Returns a constructed Array2D with the given dimensions. All elements are set to NULL. Returns NULL if either rows or columns is <= 0.

```
Array2D AllocateArray2DFile(char* path, APayloadDeserializeFnPtr
deserializer);
```

Reconstructs a saved Array2D from file, with the given rows, columns, and elements. Returns NULL if path or path contents are invalid.

```
APayload_t SetElementArray2D(Array2D array, int x, int y, APayload_t
payload);
```

Stores the payload in row x column y of array. Returns the original value in location [x][y], or NULL if [x][y] is out of bounds.

```
APayload_t GetElementArray2D(Array2D array, int x, int y);
```

Returns the value stored at element (x,y) of the array, NULL if (x,y) is out of bounds.

```
bool SwapElementsArray2D(Array2D array, int x1, int y1, int x2, int
y2);
```

Swap the value at [x1][y1] with the value at [x2][y2]. Returns false if either set of coordinates are out of bounds.

```
int GetRowCountArray2D(Array2D array);
```

Returns the number of rows in the array, or -1 on failure.

```
int GetColumnCountArray2D(Array2D array);
```

Returns the number of columns in the array, or -1 on failure.

```
bool SaveToFileArray2D(Array2D array, APayloadSerializeFnPtr
serializer, char* path);
```

Saves array to a json file. Returns true if successfully saved.

```
void FreeArray2D(Array2D array, APayloadFreeFnPtr freeFunction);
```

Frees the structure and all held payloads.