Exercises – Constructors and Destructors

Exercises:

1. Given the following class, which of the following constructor gets called for each of the following code snippets?

```
class Player
{
public:
	Player();
	Player(const char * name);
	Player(int a_max_ammo, int a_max_health);
	Player(float x, float y);
	Player(Player& a_player);

	float X, Y;
	int ammo;
	int max_ammo;
	int health;
	int max_health;
	char name[64];
};
```

```
Player p1(100, 100);  //a
Player p2(25.f, 16.f); //b
Player p3(p1); //c
Player p4("Jerry"); //d
Player p5(); //e
```

2. For each of the following classes, write a destructor that behaves appropriately:

```
class Player
{
public:
	struct Bullet { float x, y; };

	Player(int max_ammo)
	{
		bullets = new Bullet[max_ammo];
		ammo = 0;
		health = 0;
		max_health = 100;
	}

	~Player(); // implement this

	int health;
	int max_health;
	int ammo;
	int max_ammo;
	Bullet* bullets;
};
```

```
class TileMap
{
public:
	struct Tile { int x, y; int tile_value; };

	TileMap(int a_width, int a_height)
	{
		width = a_width;
		height = a_height;

		tiles = new Tile*[height];

		for (int row_index = 0;
			row_index < height;
			++row_index)
		{
			tiles[row_index] = new Tile[width];
		}
	}
	~TileMap(); // implement this

	int width;
	int height;
	Tile** tiles;
};
```

```
class Texture
{
public:
	Texture(char* a_filepath,
		int a_width,
		int a_height,
		int a_bytes_per_pixel)
	{
		int path_len = strlen(a_filepath);
		filepath = new char[path_len + 1];
		strcpy(filepath, a_filepath);

		width = a_width;
		height = a_height;

		pixel_data = new char[width * height * a_bytes_per_pixel];
	}

	~Texture(); // implement this

	char * filepath;
	char * pixel_data;
	int width;
	int height;
};
```

3. CHALLENGE: Write a class that for a dynamically created array of ints. Your class should have a constructor that takes in how many elements big the array should be. You should implement a destructor and a copy constructor.