CS153 Homework 3

October 31, 2017

1. (2 points) Examine the following code segment:

```
struct view;
typedef struct
{
    bool isOK;
    struct view * v_ptr;

}model;

typedef struct
{
    bool isOK;
    model * m_ptr;
}controller;

typedef struct
{
    bool isOK;
    controller * c_ptr;
}view;


 int main(void) {
     puts("!!!Hello World!!! for MVC"); /* prints !!!Hello World!!! */
     model *  model_ptr = modelConstructor();
     view * view_ptr = viewConstructor();
     controller * control_ptr = controllerConstructor();
     bool viewHasController = viewSetController(control_ptr);
     bool controlHasModel = controlSetModel(model_ptr);
     bool modelHasView = modelSetView(model_ptr, view_ptr);

     bool doneModel = modelDestructor(model_ptr);
     bool doneView = viewDestructor(view_ptr);
     bool doneController = controllerDestructor(control_ptr);
```

```
return EXIT_SUCCESS;
}
```

Draw the table of variable names, addresses and content, assuming that the variables local to main begin at address 0xFF4000. Invent the values returned by malloc, and record them. Recall that addresses identify individual bytes. Allow the booleans 1 byte each. Allow the integer 4 bytes. Allow all pointers 8 bytes. Store the variable data efficiently of memory space, given the above constratins. Explain why the values you entered into the table make sense.

2. (4 points): When we have an "object" that appears in an inheritance diagram as a parent, and we similarly have an "object" that is the child of that parent, how do we use C language structs to implement that relationship? Demonstrate this by writing some example code.

3. (5 points): Examine the code below. Modify that code to construct, every 10 seconds, a Tetris block.

```
tetrisBlock * b[10];

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

```
{

     delay(10); /*ten seconds*/
}
```