CSE108 – Computer Programming Laboratory

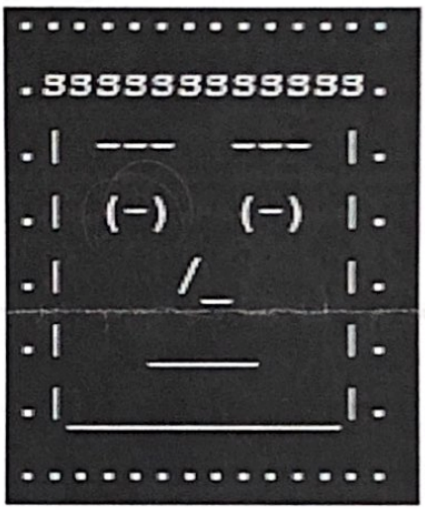
Lab #10

Date: Monday April 15, 2019

Handin: A student with number 20180000001 should hand in three separate files named `20180000001_part1.c`, `20180000001_part2.c` for this lab.

Part 1. [20pts] Write a function that takes a 2-D structure array, will be named as canvas, as an input and fill the canvas with pixel structures according to given image that is shown below. Use left top corner as the origin when you organize your coordinate system. The function prototype is:

```
void fill_canvas(pixel canvas[8][14])
```



Part 2. [10pts] Write a function that takes a canvas to print. The canvas consists of pixel structures. Use the canvas which has generated on part-1 to test your function. The function prototype is:

```
void show_canvas (pixel canvas[8][14])
```

Part 3. [30pts] Write a function that takes a canvas and a specific shape to find the shape in the canvas and prints start location of the shape when the function finds a matching. Use (-) shape to test your function. The function prototype is:

```
void find_shape (pixel canvas[8][14],char * shape)
```

Part 4. [10pts] Write a function that takes a structure array to store animals data which stated on the following table. The function prototype is:

```
void fill_struct_array (animal table[4])
```

Name	Species	Length (cm)	Weight (kg)	Natural Habitat
Lion	Mammals	200	130	Savannah
Dolphin	Mammals	300	180	Oceans
Shark	Fish	450	250	Oceans
Wolf	Mammals	160	60	Forest

Part 5. [10pts] Write a function that finds tallest, shortest and average animal lengths and return them. Note that, you can only use one loop in the function. The function prototype is:

```
void length_info (animal table[4],int * max, int min, double * avarage)
```

Part 6. [10pts] Write a function that returns mammals which are heavier than 100 kg and live on the ground. The function prototype is:

```
void filter_mammals(animal table[4],animal filtered_animals[4])
```

Part 7. [5pts] Write a function that takes an animal as an input and allows to change weight of an animal. The function prototype is:

```
void change_weight(animal * animal_to_change)
```

Part 8. [5pts] Write a function that takes animal array to print the data of animals as a table. The function prototype is:

```
void print_animals(animal table[4])
```

output:

```
Name   | Species    |  Length (cm)    | Weight (kg)     |Natural Habitat
-----------------------------------------------------------------------
 Lion   | Mammals   |      200        |      130        |      Savannah
Dolphin| Mammals   |      300        |      180        |      Oceans
Shark  | Fish      |      450        |      250        |      Oceans
Wolf   | Mammals   |      160        |      60         |      Forest
```