Programming assignment 2: Using pointers

Problem 1

Read the length and breadth of a rectangle. Compute its area. Print the area. Declare variables to hold the dimensions and area. Use scanf() and printf().

Problem 2

Edit and compile the following program (line numbers are given for convenience and are not part of program source code):

```
 1  #include<stdio.h>

 2     int main() {
 3
 4           int a, b; // integer type
 5           int *p_a, *p_b; // pointer to integer

 6           // assign value to variables
 7           a = 5;
 8           b = 10;

 9           // assign values to pointers of the variables
10           p_a = &a;
11           p_b = &b;

12           // print the variable directly
13           printf("The value of variable a is: %d\n",a);
14           printf("The value of variable b is: %d\n",b);

15           // print the variable using its pointer
16           printf("Using its pointer, the value of variable a is
%d\n", *p_a);
17           printf("Using its pointer, the value of variable b is
%d\n", *p_b);

18     } // end main
```

- What is the output? Do you find a difference when the variable is printed directly or when using its pointer?
- Make the following one change to the program: in the second-last line, remove the '*' before p_a. Recompile and execute the program. What do you see? Why does the program behave the way it does?
- Modify the program to make p_a point to b after line no. 11. What is the output now?
- Declare a new variable p_p_a, which is a pointer to a pointer of an integer. Print the value of the variable using this pointer to a pointer.
- Print the sum of a and b using their corresponding pointers.

Problem 3

Declare 3 integer variables and assign different values to each of them. Declare one pointer variable. Use this variable to increment each of the 3 variables by 1. After each variable is incremented, print the new value using the variable name and print the address of the variable.

Problem 4

Declare 3 integer variables and assign different values to each of them. Declare one pointer variable. Use this variable to increment each of the 3 variables by 1. After each variable is incremented, print the new value using the variable name and print the address of the variable.