HW06 Problem Set

CS-3160

Assignment

HW06: Sebesta: Problem Set 9.(5), Programming Exercises 9.(5,10)

HANDWRITTEN – Due at beginning of class on due date.

PROGRAM – Due at midnight, via Blackboard, at midnight on day prior to due date.

Handwritten Portion

5. Consider the following program written in C syntax:

```
void swap(int a, int b) {
  int temp;
  temp = a;
  a = b;
  b = temp;
}
void main() {
  int value = 2, list[5] = {1, 3, 5, 7, 9};
  swap(value, list[0]);
  swap(list[0], list[1]);
  swap(value, list[value]);
}
```

For each of the following parameter-passing methods, what are all of the values of the variables `value` and `list` after each of the three calls to `swap`?

a. Passed by value

b. Passed by reference

c. Passed by value-result

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Programming Portion

5. Write a program in some language that has both static and stack-dynamic local variables in subprograms. Create six large (at least 100 × 100) matrices in the subprogram—three static and three stack dynamic. Fill two of the static matrices and two of the stack-dynamic matrices with random numbers in the range of 1 to 100. The code in the subprogram must perform a large number of matrix multiplication operations on the static matrices and time the process. Then it must repeat this with the stack-dynamic matrices. Compare and explain the results.

10. Devise a subprogram and calling code in which pass-by-reference and pass-by-value-result of one or more parameters produces different results.

NOTE:

Use C for both Programming Problems.

For 9.10, write a single program that has two functions, one that uses pass-by-reference semantics and one that uses pass-by-value-result semantics. In order to get the pass-by-value-result semantics, you will need to emulate this behavior by passing the address of the variables to the subprogram, copying them to local variables, performing the manipulations on the local variables, and then copying them back to the original addresses before returning from the subprogram.

Grading Rubric

The assignment is worth 25 pts (as a whole) and the score will be recorded as a percentage of that amount.

	Handwritten	Programming	
Problem	5	5	10
Points	9	8	8

10% Physical Format
50% Answers correct (and supported by work)
40% Effort evidenced by the submitted work