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06CS846

Eighth Semester B.E. Degree Examination, May/June 2010
Programming Languages

Time: 3 hrs. Max. Marks:100

Note: *Answer any FIVE full questions, selecting at least TWO questions from each part.*

PART – A

1 a. With diagrams, explain the compilation and interpretation. Compare the two,. **(07 Marks)**

b. What is a frame with respect to stack based allocation? With relevant diagram, explain the contents and importance of activation record. **(07 Marks)**

c. Explain the explicit parametric polymorphism. Write a C++ code to find the smallest of two integers and smallest of two real numbers. **(06 Marks)**

2 a. What is unlimited extent of local variables? With a LISP code, bring out how it is useful and implemented. What are the problems? **(06 Marks)**

b. What is precedence and associativity of operators in a PL? Explain the same taking the arithmetic operators of 'C' language. **(06 Marks)**

c. Write notes on :
i) Ordering within expression ii) Short circuit evaluation. **(08 Marks)**

3 a. Explain with suitable examples, the characteristics of sequencing and selection control flows in PLs. **(10 Marks)**

b. Compare iteration v/s recursion. Write a 'C' code to compute n! using these. **(10 Marks)**

4 a. Explain the two purposes served by a type in PL. **(05 Marks)**

b. What is type inference? Describe the contexts in which it occurs. **(08 Marks)**

c. What is a dope vector? What purpose does it serve? **(03 Marks)**

d. Explain the difference between row major and column major layout for contiguously allocated arrays. **(04 Marks)**

PART – B

5 a. What are dangling references? How are they created? What problems do they result in? Explain with an example. **(08 Marks)**

b. Discuss the advantages and disadvantages of the interoperability of pointers and arrays in 'C' language. **(08 Marks)**

c. What is a pointer reversal? What problem does it address? **(04 Marks)**

6 a. With a typical stack frame layout, explain how a calling sequence operates in subroutines. Further, how do calling sequences differ in RISC and CISC compilers? **(10 Marks)**

b. Explain exception handling mechanism and its implementation. Distinguish between exception implementation in functional languages and imperative languages. **(10 Marks)**

7 a. Briefly bring out the concept of coroutines in PL. **(05 Marks)**

b. Explain the three benefits provided by abstraction. **(05 Marks)**

c. Summarise the rules in C++ to determine the order of constructor's invocation. How are these simplified in other languages? **(10 Marks)**

8 a. Explain the following LISP functions, with examples :
i) car ii) cdr iii) cons iv) cond v) let. **(10 Marks)**

b. Explain the functional programming in perspective. **(10 Marks)**

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