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10CS62

Time: 3 hrs.   Max. Marks:100

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

PART – A

1 a. What are the major differences between ANSI 'C' and K and R 'C'? Explain with examples.
   (07 Marks)

   b. Write C/C++ POSIX compliant program to check the following limits :
      i)   Number of clock ticks
      ii) Maximum number of child processes
      iii) Maximum path length
      iv) Maximum number of characters in a filename.   **(07 Marks)**

   c. What do you mean by the term feature test macros? List all the test macros along with their meaning.   **(06 Marks)**

2 a. Differentiate between C stream pointers and file descriptors.   **(04 Marks)**

   b. Explain the UNIX kernel support for files with a neat diagram.   **(10 Marks)**

   c. Differentiate between hard links and symbolic links with examples.   **(06 Marks)**

3 a. What is an API? Explain why calling an API is more time – consuming than calling a user – defined function.   **(04 Marks)**

   b. Explain the following API's with prototypes : i) open ii) lseek iii) fcntl.   **(12 Marks)**

   c. Write a C/C++ program to emulate *ln* command in UNIX.   **(04 Marks)**

4 a. With a neat diagram, explain the memory layout of a C program for the given C program, identify the various segments when the program is executed :
   ```
   #include <stdio.h>
   int a = 5; int b ; int data[10] ;
   const int i = 5;
   int main( )
   {
     int x;
     char *ptr = malloc(50);
     return 0;
   }
   ```
   (10 Marks)

   b. Explain in detail with prototypes the C functions for memory allocation.   **(07 Marks)**

   c. Mention the rules to change the resource limits.   **(03 Marks)**

PART – B

5 a. What is a race condition? Write the program for generating race condition and to avoid the race condition.   **(08 Marks)**

   b. In UNIX, explain the freopen function. Write a C/C++ program to implement the freopen function.   **(08 Marks)**

   c. What is job control? What are the three forms of support from the OS required for job control?   **(04 Marks)**