

Mid-semester
Operating Systems Workshop (CSE 3541)
Programme: B.Tech. (CSE) Semester: 5th
Full marks: 30 Time: 2 hour

1. (a) Assuming that side and area are type double variables containing the length of one side in cm and the area of a square in square cm, write a statement that will display this information in this form: [2]

The area of a square whose side length is _____ cm is _____ square cm.

Ans:

b. Write the #define preprocessor directive and declarations for a program that has a constant macro for PI (3.14159) and variables radius, area, and circumfer declared as double , variable num_circ as an int , and variable circ_name as a char. [2]

Ans:

c. If you have N eggs, then you have N/12 dozen eggs, with N%12 eggs left over. Write a program that asks the user how many eggs she has and then tells the user how many dozen eggs she has and how many extra eggs are left over. A gross of eggs is equal to 144 eggs. Extend your program so that it will tell the user how many gross, how many dozen, and how many left over eggs she has. [2]

Ans:

2. a. Trace the execution sequence and determine the output of the following code snippet. [2]

Ans:

b. Write a program for an automatic teller machine that dispenses money. The user should enter the amount desired (a multiple of 10 dollars) and the machine dispenses this amount using the least number of bills. The bills dispensed are 50s, 20s, and 10s. Write a function that determines how many of each kind of bill to dispense. [2]

Ans:

c. Write a program to process a collection of scores obtained by students of a class of certain strength . Your program should count and print the number of students with Grade A (80 and higher), Grade B(65-79), Grade C(40-64) and Grade F(39 and below) . Ensure that the entered scores must remain in between 0 and 100(inclusive).

Test your program on the following data:

[2]

-23 567 65 12 89 32 17 45 41 58 60 78 82 88 19 22 70 88 41 89 78 79 72 68 74 59
75 81 44 59 -23 -12

Ans:

3. a. An integer n is divisible by 9 if the sum of its digits is divisible by 9. Develop a program to display each digit, starting with the rightmost digit. Your program should also determine whether or not the number is divisible by 9.

[2]

Ans:

b. ill the formal parameters at the symbols, ??, to the functions f1 and f2. Also write the output of the code segment.

[2]

Ans:

c. Develop a program to use the idea of multiple calls to a function with input/output parameters to sort 6 integer numbers in ascending order without using any sorting algorithms. The prototype of the function to be used in your program to sort the numbers is given as void arrange(int , int); and also draw the data areas of calling function and arragne() function for the first function call arrange(. . .).

[2]

Ans:

4 a. Write a program to copy the distinct elements of an int type array to another int type array. For example, if the input array is 4 7 7 3 2 5 5 then the output array will be 4 7 3 2 5.

[2]

Ans:

b. Given the string char pres[]="Adams,John Quincy"; and the 40-character temporary variables tmp1 and tmp2. State the execution of the code snippet and output at printf.

[2]

Ans:

c. Organize the Unix commands you have learned to achieve the given task; (1) create a directory (2) create a file in that directory (3) display the content of the file using cat (4) append few more lines to the file using cat (5) display the list of files. [2]

```
1. mkdir folder
2. echo "Hello !!! How are you" > folder/file.txt
3. cat folder/file.txt
4. cat >> folder/file.txt [enter the lines and press ctrl+D to end]
5. ls folder/
```

5. a. Draw the diagram of the argument array prepared by the shell given to `int main(int argc, char *argv[])` for the command line `./a.out "usp dos" SOA iter CSE`. [2]

Ans:

b. Write the output of the following code snippet and state the reason for such output. Assume all required headers are present. [2]

Ans:

Ans:

c. Construct the process tree diagram with the output of the following code snippet assuming fork never fails. [2]

Ans: 128 times "is-a-parent relationship"