Lab Assignment -8 Marks: 14

1. Consider the following code segment

```
#include<stdio.h>
void main() {
  int a[3][4] = {
                  {1, 2, 3, 4},
                  {11,12 13, 14},
                  {21,22,23,24}
                };
  int (*p)[4];
  p = a;
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```

   Complete the program adding the following instructions.
   - Print the value of p, p+1 and p+2
   - Print the value of *(*(p+i)+j) where 0<= i < 3 and 0<=j <4
   - Do the above using a as the pointer.
2. Write a program to implement the concept of array of pointers. Create an array of pointers of length 5. Create another array of integers of size 5. Now assign each element of the array to each pointer. Update the values of the array using pointers by adding 5 to each array element. Print the updated value using both array and pointer expressions.
3. Write a program to create a 3-dimensional array arr[2][3][2] of integers. Print the values of the array using pointer arithmetic where arr is the pointer and also find the largest number from the array using a pointer.

Hint: The general expression is: *(*(*(arr + i) + j) +k) where 0<= i <2, 0<= j <3 and 0<k <2.

4. Create a 2-dimensional array arr[3][5]. Create a pointer to the array. Now sort (ascending order) the array row-wise. At the end print the sorted array using pointer arithmetic.
5. Dynamically allocate memories to store a pair of square matrices where the dimension values [MxN and NxM both N,M <=3] and the matrix elements are received from the user. Perform multiplication of these matrices. Use malloc() for dynamic allocation of memory and the function free() for deallocation.
6. Dynamically allocate memories to two square matrices A and B. Check if the following holds true: $(A.B)^{-1} = B^{-1}.A^{-1}$. Use malloc() for dynamic allocation of memory and the function free() for deallocation. For ease of implementation, you can consider 2x2 matrices.
7. Scrabble is a word game. Two or more players can play it. Players make words using letter tiles available with them and those already on the board. Each word has a score based on the value of each letter and the squares covered by the word. In this problem you have to write a program that reads a word and calculates the score of the word using the letter values. Use the following values for the letters.

Value	Letters with value
1	All vowels, N, T, L, R, S
2	D, G
3	B, C, M, P
4	F, H, V, W, Y
5	K
8	J, X
10	Q, Z

Your program should work for both lower case and upper-case letters in the input word. If the input contains any non-alphabetic characters, then the program should print "Illegal input". Hint: You can use one of the standard library functions to convert all lower-case letters to upper case.

If input is Quiz then the program should print 22. If the input is What is the program should print Illegal input since the input contains a space which is not alphabetic.