1. Write a declaration of an array named weekend containing seven Bool values. Include an initializer that makes the first and last values true; all other values should be false.

2. The Fibonacci numbers are 0, 1, 1, 2, 3, 5, 8, 10…, where each number is the sum of the preceding two numbers. Write a program fragment that declares an array named fib_numbers of length 40 and fills the array with first 40 Fibonacci numbers.

3. Why do array subscripts starts at 0 instead of 1?

4. Define an array. How to initialize one-dimensional array? Explain with suitable examples.

5. Write a C program to sort the given array elements in Ascending order.

6.Write a C program to read N integers into an array A and to find the (i)sum of odd numbers,(ii) sum of even numbers,(iii) average of all numbers. Output the results computed with appropriate headings

7. Write a C program to search an element using linear and binary techniques

8. Write a C program to find the largest element in an array

9. Write a program to convert a given integer into a string which has the binary equivalent of the number. Example: Assuming that an integer is 32-bits long and for the number 5, the resultant string should be "00000000000000000000000000000101"

10. Using arrays, write a program to check whether a given number has repeated digits. Ex: 456754 (has repeated digits) and   3456 (Does not have)

11. Describe the array index out of bound error in context of C array program.

12. Justify the statement: C compiler never check the array index out of bound error.

13. What do you mean by compile time initialization? Give suitable example of Compile time initialization of C Array.

14. Print all possible combinations of r elements in a given array of size n. Given an array of size n, generate and print all possible combinations of r elements in array. For example, if input array is {1, 2, 3, 4} and r is 2, then output should be {1, 2}, {1, 3}, {1, 4}, {2, 3}, {2, 4} and {3, 4}.

15. Given an array, find any two elements of the given array whose difference is 0. a = {12,33,44,66,12,9}

16. Given an array, find all the elements of the array whose sum is equal to 100. a = {23,55,66,77,50, 40, 10}

17. Program to find the addition of pair of elements in a given array input: 2 3 4 5 6 7 output: 5 9 13 input: 2 3 4 5 6 output: 5 9 6

1 Define pointer. How can you declare and initialize it.
6. Write a C program to illustrate the use of indirection operator to access the value pointed by a pointer.
7. What are the features of pointers? Write a C program to print address of a variable
8. With proper examples explain different arithmetic operations on pointers.
9. Write a C program to show that pointer of any data type occupies same space.
10. Write a C program to read and print an array of elements using pointers

Functions

1. Names of parameters in a function prototype have to match the names given in the function definition. TRUE/FALSE

2. Briefly explain about function prototypes.

3. Write a function named int zeroCheck(int a, int b, int c); that is given three integers, and returns 1 if any of the integers is 0, otherwise it returns 0.

4. Write a function: char getContinue(); that displays to the user "Do you want to continue (y/n): ", and continues to prompt the user until either uppercase or lowercase 'y' or 'n' is entered, returning (lowercase) 'y' or 'n' as the function return value.

5. Write a function check(x, y, n) that returns 1 if both x and y fall between 0 and n-1 (both inclusive). The function should return 0 otherwise. Assume that x ,y and n are all of type int.

6. Write a function day_of_year(month, day ,year) that returns the day of the year (an integer between 1 and 366) specified by three arguments.

7. Write a function num_digits(n) that returns the number of digits in n (a positive integer)

8. Write a function digit(n, k) that returns the kth digit (from the right) in n (a positive integer). For example, digit(829, 1) returns 9. Digit(829, 2) return 2 and digit(829, 3) returns 8. If k is greater than the number of digits in n, have the function return 0.

9. What is the output for the following code:
```c
#include <stdio.h>
int what(int a, int n)
{
        if(n == 0)
                return 1;
        else if(n % 2)
                return a * what(a * a, n / 2);
        else
                return what(a * a, n / 2);
}
```

```
int main()
{
        int a = 3, b = 5;
        printf("%d\n", what(a, b));
}
```

10. Which of the following would be valid prototypes for a function that returns nothing and has one double parameter?
    a. void f(double x);
    b. void f(double);
    c. void f(x);
    d. f(double x);

11. Write functions that return the following values. (Assume that a and n are parameters, where a is an array of int values and n is the length of the array)
    a. The largest element in a
    b. The average of all elements in a
    c. The number of positive elements in a

12. Write the following function:
    float compute_GPA(char grades[], int n);
    the grades array will contain letter grades (A, B, C, D, or F, either uppercase or lowercase); n is the length of the array. The function should return the average of the grades (assume that A = 4, B = 3, C = 3, D = 1, and F= 0)

13. Write a function to solve the Tower of Hanoi problem using recursion.

14. Write a program to find the gcd of 2 numbers using recursion.

15. Write a program to find the number of digits in an interger using recursion.
    int length(int n);
    length(892) will return 3
    length(3452) will return 4.

1) Consider following array

   p[3][3]={1,2,3,4,5,6,7,8,9};

   Assume the base address of array p=1000.

   find the address of p[2][3]?

   Note: 2D array follows Row major ordering

2) Write a C program to read a 2D Arrays(Matrix) and print the sum of each row.
3) Write a Function and test the function to find the sum of left diagonals of a matrix
4) Write a C program print or display the lower triangular of a given matrix.
   The matrix
   1 2 3
   4 5 6
   7 8 9
   Setting zero in lower triangular matrix
   1 2 3
   0 5 6
   0 0 9
5) Write a program in C to accept two matrices and check whether they are equal using functions.
6) Write a program to accept elements and print 2D Array using Pointers
7) Write a program in C to find the row with maximum number of 1s using functions
   The given 2D array
   0 1 0 1 1
   1 1 1 1 1
   1 0 0 1 0
   0 0 0 0 0
   1 0 0 0 1
8) Write a function to check whether a matrix is symmetric matrix or not
9) Find the Intersection of two matrices. Sample Input :

A[4][4] = {{2, 4, 6, 8},

{1, 3, 5, 7},

{8, 6, 4, 2},

{7, 5, 3, 1}};

B[4][4] = {{0, 4, 3, 8},

{1, 3, 5, 7},

{8, 3, 6, 2},

{4, 5, 3, 4}};

Sample Output :

* 4 * 8

1 3 5 7

8 * * 2

* 5 3 *

1. What is a storage class? List all the storage classes in C.
2. Where does global, static, local, register variables and C Program instructions get stored?
3. what is the meaning and use of static keyword in c?
4. Identify the error in the below code and explain

```c
#include<stdio.h>
main ()
{
extern int i; i=20;
printf("%d",i);
 }
```

5. The inital value of register storage class specifier is _____
6. In case of a conflict between the names of a local and global variable what happens?
7. What is the output of the program? Explain your answer

```c
void myshow();

int main()
{
        myshow();
        myshow();
        myshow();
}

void myshow()
{
        static int k = 20;
        printf("%d ", k);
        k++;
}
```

8. Explain with a C program difference between Local and Global variable .

1. What is Enum in C? Give an example.
2. Write a program to declare an enum type year containing all months in a year and display second month.
3. What will be the output of the following C code?

```
#include <stdio.h>
enum example {a = 1, b, c};
enum example example1 = 2;
enum example answer()
{
   return example1;
}
 int main()
{
   (answer() == a)? printf("yes"): printf("no");
   return 0;
}
```

4. In enumeration, the set of enumeration constant may contain a duplicate value. True/False?
5. What is the output of the following code?

```
#include<stdio.h>
int main ()
 {
   enum pesu{July=0, Aug, Dec };
   enum pesu course = Dec;
   if (course ==0)
     printf("course is in July");
   else if(course ==1)
     printf("course is in Aug");
   if(course==2)
     printf("course is in Dec");
}
```

6. What is the benefit of using an enum rather than a #define constant?
7. What is the output of the following code?

```
#include<stdio.h>
enum City {Bangalore, Mysore=5, Mangalore, Pune};
int main ()
{
        printf("%d %d ",Mysore, Bangalore);
          enum City c=Pune;
        printf("%d %d", c*Mysore, c/Mysore);
          return 0;
}
```