Assignment1:–

Basics:–

1. Swapping of two no.s (with, without temporary, one line code with xor operator)

2. Write a program to find area, perimeter of the circle
a) consider PI as symbolic constant
b) consider pi as constant double variable

Check the preprocessed output for above program using -E option of gcc or with the tool cpp in both
the cases, which is preferred among these two alternatives,justify.

3. Differentiate between post, pre decrement operators
a) k=i++, k=++i
b) y=x++*10, y=++x*10
c) q=p--/3, q=--p/3

4. Reversing 4 digit no.

5. Conversion of ip address in a.b.c.d format into 32 bit unsigned integer and vice versa

6. Using bitwise operators for the expressions for
a) set k th bit
b) reset k th bit
c) flip k th bit
d) query the k th bit

7. Biggest of 3 no.s using conditional operator

8. Using sizeof operator find no.of bytes required for different data types

9. Find the max,min values supported by different data types with the constants defined in limits.h

10. Write a program to convert time between hh:mm:ss format and total no.of seconds(note:- you may take
the input hh,mm,ss separately, need not be in string forms
for eg:- 1:2:30 ==> 3750
8000 ==> 2:13:20

11. Go through the functions provided in math.h, ctype.h files

12. Formatted I/O using printf (%5d, %05d,%-5d,%8.2f, %.2f etc.)

13. Given a=10,b=20,c=30 evaluate the following
d=++a,++b,++c,a+5;
d=(++a,++b,++c,a+5);

14. Justify the output of following code.
int a=10,b;
b=sizeof(++a)
printf("a=%d,b=%d\n",a,b);

15. Give the output of following code.

```
char c1='A';
printf("%d,%d\n",sizeof(c1), sizeof('A'));
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16. Evaluate following expressions,find x,y,z values in each case assuming x=1,y=5 initially,
what do you observe

a) z=++x && ++y;
b) z=--x && --y;
c) z=++x || ++y;
d) z=--x || --y;

17. Find sum & avg of elements in an array

18. Find min & max element in an array

19. Reversing an array in memory

20. Addition of two arrays

21. Addition, Subtraction of long integers

22. No. conversions (decimal, binary, octal, hexadecimal)

23. Polynomial evaluation where coefficients are stored in an array
a0xn+a1xn-1+a2xn-2+...+an

24. Addition, Subtraction, Multiplication of two matrices

25. Transpose of a matrix

26. Trace of a matrix

27. Determinant for 2x2 , 3x3 matrices

28. Solving linear equations
a1x+b1y=c1; a2x+b2y=c2
a1x+b1y+c1z=d1; a2x+b2y+c2z=d2; a3x+b3y+c3z=d3

29. Generation of identity, null matrices

30. Checking whether given matrix is identity or not?

31. Checking whether given matrix is null or not?

32. Finding day of week based on reference date, say 1 st January 1970 which is thursday.
(Hint:- calculate no.of days elapsed from reference date to given date)
For Analysis – Program may not be required

33. Go through the functions provided in math.h, ctype.h files

34. Using sizeof operator find no.of bytes required for different data types like int,float,double,char with applicable qualifiers like short,long,long long

35. Find the max,min values supported by different data types with the constants defined in limits.h

36. Explore various format specifiers used in printf, scanf %5d, %05d,%-5d,%8.2f, %.2f ,%e,%g,%u,%ld,%lu,%lld