Gokul Global University, Siddhpur

FACULTY OF COMPUTER SCIENCE AND APPLICATIONS

PRACTICALS SOLUTIONS OF C LANGUAGE

1. Write a C program to display "Gokul University" on the screen.

```
#include <stdio.h>
int main() {
   // Write C code here
printf("Gokul University");
   getch();
   return 0;
}
```

OUTPUT :

```
Gokul University
```

2. Write a C program to find the area of circle using the formula Area=PI * r * r.

```
 #include <stdio.h>
 int main()
 {
      int r=6;
 float pi=3.14,a;
 a=4*pi*r*r;
      printf("\n Value of area of circle=%f",a);
 getch();
   return 0;
}
```

OUTPUT :

```
Value of area of circle=452.160004
```

3. Write a C program to find the area of rectangle, cube and triangle.(Formula are: Rectangle=l *b*h, triangle =(l * b)* 0.5, cube = L*L*L

```
#include<stdio.h>
Int main()
                {
                        int l,b,h,i;
                        printf("enter the value of l= ");
                        scanf("%d",&l);
                        printf("enter the value of b= ");
                        scanf("%d",&b);
                        printf("enter the value of h= ");
                        scanf("%d",&h);

                        i=l*b*h;
                        printf("value of a rectangle= %d ",i);
                        return 0;
```

```
}
```

OUTPUT:

```
enter the value of l= 12
enter the value of b= 43
enter the value of h= 24
value of a rectangle= 12384
```

4. Write a C program to evaluate simple interest I = P*R*N / 100.

```
#include <stdio.h>
int main()
{
    int p=1000,r=6,n=5;
    float i;
     i=p*r*n/100;
  printf("\nValue of area of interest=%f",i);
    getch();
  return 0;
}
```

OUTPUT:

```
Value of area of interesr=300.000000
```

5. Write a C program to enter a distance into K.M and convert it in to meter, feet, inches and Centimeter

---

```
#include <stdio.h>

void main() {
   float km, m, feet, inch, cm;

   // Input
   printf("Enter the distance between two cities (in
km): ");
   scanf("%f", &km);

   // Conversion calculations
   m = km * 1000;         // 1 km = 1000 meters
   feet = km * 3280.84;    // 1 km = 3280.84 feet
   inch = km * 39370.1;    // 1 km = 39370.1 inches
   cm = km * 100000;      // 1 km = 100000 centimeters

   // Output
   printf("\nDistance in kilometres = %.2f km", km);
   printf("\nDistance in metres = %.2f m", m);
   printf("\nDistance in feet = %.2f ft", feet);
   printf("\nDistance in inches = %.2f in", inch);
   printf("\nDistance in centimetres = %.2f cm\n", cm);
}
```

OUTPUT:

```
Enter the distance between two cities (in km): 2.5

Distance in kilometres = 2.50 km
Distance in metres = 2500.00 m
Distance in feet = 8202.10 ft
Distance in inches = 98425.25 in
Distance in centimetres = 250000.00 cm
```

6. Write a C program to interchange two numbers.

```
#include <stdio.h>

int main() {
   int a, b, temp;

   // Input values
   printf("Enter a: ");
   scanf("%d", &a);

   printf("Enter b: ");
   scanf("%d", &b);

   // Swapping logic using a temporary variable
   temp = a;
   a = b;
   b = temp;

   // Output after swapping
   printf("\nAfter swapping, a = %d\n", a);
   printf("After swapping, b = %d\n", b);

   return 0;
 }
```

OUTPUT:

```
Enter a: 10
Enter b: 20

 After swapping, a number = 20
After swapping, b number = 10
```

7. Write a C program to convert Fahrenheit into centigrade

```
 #include <stdio.h>
int main() {
   float Fahrenheit, Celsius;

   // Assigning Fahrenheit temperature
   Fahrenheit = 64;

   // Conversion formula
   Celsius = ((Fahrenheit - 32) * 5) / 9;
```

```
    // Output result
    printf("\nTemperature in Celsius is: %.2f\n", Celsius);

    return 0;
}
```

OUTPUT:

```
Temperature in Celsius is : 17.777779
```

8. Write a C program for summation, subtraction, multiplication, division of two number using Arithmetic operator

```
#include <stdio.h>
int main() {
    int num1, num2;
    int sum, sub, mult;
    float div;

    // Input
    printf("Input any two numbers separated by comma: ");
    scanf("%d, %d", &num1, &num2); // Expecting comma-separated input

    // Calculations
    sum = num1 + num2;
    sub = num1 - num2;
    mult = num1 * num2;
    div = (float)num1 / num2;

    // Output
    printf("The sum of the given numbers: %d\n", sum);
    printf("The difference of the given numbers: %d\n", sub);
    printf("The product of the given numbers: %d\n", mult);
    printf("The quotient of the given numbers: %.2f\n", div);

    return 0;
}
```

OUTPUT:

```
Input any two numbers separated by comma : 12
The sum of the given numbers : 6422364
The difference of the given numbers : -6422340
The product of the given numbers : 77068224
The quotient of the given numbers : 0.000002
```

9. Write a C program to find out the largest value from given three numbers using conditional Operator.

```
#include <stdio.h>

void main() {
   int a, b, c, big;

   // Input
   printf("Enter three numbers: ");
   scanf("%d %d %d", &a, &b, &c);

   // Logic to find the biggest number using ternary operator
   big = (a > b) ? ((a > c) ? a : c) : ((b > c) ? b : c);

   // Output
   printf("\nThe biggest number is: %d\n", big);
}
```

OUTPUT:

```
Enter three numbers : 10
20
30

 The biggest number is : 30
```

10. Write a C program to find the maximum number from given three numbers.

```
#include <stdio.h>

int main() {
   int a, b, c;

   // Input
   printf("Enter three numbers:\n");
   printf("a: ");
   scanf("%d", &a);

   printf("b: ");
   scanf("%d", &b);

   printf("c: ");
   scanf("%d", &c);

   // Logic to find the biggest number
   if (a > b && a > c)
      printf("Biggest number is %d\n", a);
   else if (b > a && b > c)
      printf("Biggest number is %d\n", b);
   else if (c > a && c > b)
      printf("Biggest number is %d\n", c);
```

```
    else
        printf("Two or more numbers are equal and largest.\n");

    return 0;
}
```
OUTPUT:

```
Enter three numbers:
a: 10
b: 20
c: 30
Biggest number is 30
```

11. Write a C program to find that the enter number is Negative, or Positive or Zero.

```
#include <stdio.h>

int main() {
    int num;

    // Input
    printf("Enter any number: ");
    scanf("%d", &num);

    // Checking condition
    if (num == 0)
        printf("The number is neither positive nor negative.\n");
    else if (num < 0)
        printf("The number is Negative.\n");
    else
        printf("The number is Positive.\n");

    return 0;
}
```
OUTPUT:

```
Enter any no:10
Positive
```

12. Write a C program to Checked whether entered char is capital, small, digit or any special Character.

```
#include <stdio.h>

int main() {
   char ch;

   // Input character from user
   printf("Enter any character: ");
   scanf("%c", &ch);

   // Alphabet check
   if ((ch >= 'a' && ch <= 'z') || (ch >= 'A' && ch <= 'Z')) {
      printf("'%c' is an alphabet.\n", ch);
   }
   else if (ch >= '0' && ch <= '9') {
      printf("'%c' is a digit.\n", ch);
   }
   else {
      printf("'%c' is a special character.\n", ch);
   }

   return 0;
}
```

OUTPUT :

```
Enter any character: A
'A' is alphabet.
```

13. Write a C program to find out the max. and min. number from given 10 numbers.

```
#include <stdio.h>

int main() {
   int a[10], i, n, min, max;

   // Input size of array
   printf("Enter size of the array: ");
   scanf("%d", &n);

   // Input array elements
   for (i = 0; i < n; i++) {
      printf("Enter element %d: ", i + 1);
      scanf("%d", &a[i]);
   }

   // Initialize min and max
   min = max = a[0];

   // Find min and max
   for (i = 1; i < n; i++) {
      if (a[i] < min)
         min = a[i];
      if (a[i] > max)
         max = a[i];
   }

   // Output results
   printf("Minimum of array is: %d\n", min);
   printf("Maximum of array is: %d\n", max);

   return 0;
}
```

OUTPUT :

```
Enter size of the array : 3
Enter 0 element in array : 10
Enter 1 element in array : 20
Enter 2 element in array : 30
minimum of array is : 10
 maximum of array is : 30
```

14. Write a C program to find the sum of digit of accepted number.

```
#include <stdio.h>

int main() {
   int n, sum = 0, m;

   // Input
```

```
  printf("Enter a number: ");
  scanf("%d", &n);

  // Logic to calculate sum of digits
  while (n > 0) {
     m = n % 10;      // Get last digit
     sum = sum + m;   // Add to sum
     n = n / 10;      // Remove last digit
  }

  // Output
  printf("Sum of digits = %d\n", sum);

  return 0;
 }
```

OUTPUT :

```
Enter a number:123
Sum is=6
```

15. Write a C program to find the sum of first 100 odd numbers. And even numbers.

```
#include <stdio.h>

void main() {
  int i, odd_sum = 0, even_sum = 0;

  // Loop through numbers from 1 to 100
  for (i = 1; i <= 100; i++) {
     if (i % 2 == 0)
        even_sum = even_sum + i;
     else
        odd_sum = odd_sum + i;
  }

  // Output the results
  printf("Sum of all odd numbers = %d\n", odd_sum);
  printf("Sum of all even numbers = %d\n", even_sum);
}
```

OUTPUT :

```
Sum of all odd numbers  = 2500
Sum of all even numbers = 2550
```

16. Write a C program to display first 25 Fibonacci nos.

```
#include <stdio.h>

int main() {
   int n1 = 0, n2 = 1, n3, i;

   printf("%d %d", n1, n2); // Printing 0 and 1

   for (i = 2; i < 25; ++i) {
      n3 = n1 + n2;
      printf(" %d", n3);
      n1 = n2;
      n2 = n3;
   }

   printf("\n");
   return 0;
}
```

OUTPUT :

```
0 1 1 2 3 5 8 13 21 34 55 89 144 233 377 610 987 1597 2584 4181 6765 10946 17711 28657 46368
```

17. Write a C program to check the accepted number is prime number or not.

```
#include <stdio.h>

int main() {
   int i, no, flag = 0;

   // Input
   printf("Enter any number: ");
   scanf("%d", &no);

   // Prime check
   if (no <= 1) {
      flag = 1;  // 0 and 1 are not prime numbers
   } else {
      for (i = 2; i <= no / 2; i++) {
         if (no % i == 0) {
            flag = 1;
            break;  // Not prime, no need to check further
         }
      }
   }

   // Output
   if (flag == 0)
      printf("The number is Prime.\n");
   else
```

```
    printf("The number is Not Prime.\n");

  return 0;
}
```

OUTPUT :-

```
Enter any no==>5
No is Prime
```

18. Write a C program to display first' 100 prime numbers.

```
#include <stdio.h>
#include <conio.h>

main() {
  int x = 1, y, i;
  clrscr();

  for (i = 1; i <= 100;) {
    for (y = 2; y < x; y++) {
      if (x % y == 0)
        goto end;
    }

   printf("First 100 prime no. is
              %d\t", x);
    i++;

  end:
    x++;
  }

  getch();
  return;
}
```

OUTPUT :-

```
First 100 prime numbers =  2    2    3    5    7    11   13   17   19   23   29   31   37   41   43   47   53
59    61    67    71    73    79    83    89    97    101   103   107   109   113   127   131   137   139   149   151
157   163   167   173   179   181   191   193   197   199   211   223   227   229   233   239   241   251   257   263
269   271   277   281   283   293   307   311   313   317   331   337   347   349   353   359   367   373   379   383
389   397   401   409   419   421   431   433   439   443   449   457   461   463   467   479   487   491   499   503
509   521   523
```

19. Write a C program to find factorial of accepted numbers.

```
#include <stdio.h>

void main() {
   int i, f = 1, num;

   // Input
   printf("Input the number: ");
   scanf("%d", &num);

   // Factorial calculation
   for (i = 1; i <= num; i++) {
      f = f * i;
   }

   // Output
   printf("The Factorial of %d is: %d\n", num, f);
}
```

OUTPUT :-

```
Input the number : 10
The Factorial of 10 is: 3628800
```

20. Write a C program to print accepted no and its reverse number.

```
#include <stdio.h>

int main() {
   int n, reverse = 0, remainder;

   // Input
   printf("Enter an integer: ");
   scanf("%d", &n);

   // Reverse logic
   while (n != 0) {
      remainder = n % 10;
      reverse = reverse * 10 + remainder;
      n /= 10;
   }

   // Output
   printf("Reversed number = %d\n", reverse);

   return 0;
}
```

OUTPUT :-

```
Enter an integer: 1526
Reversed number = 6251
```

21. Write a C program to convert decimal numbers into equivalent hexadecimal number.

```
#include <stdio.h>

int main()
{
   long decimalnum, quotient, remainder;
   int i, j = 0;
   char hexadecimalnum[100];

   printf("Enter decimal number: ");
   scanf("%ld", &decimalnum);

   quotient = decimalnum;

   while (quotient != 0)
   {
      remainder = quotient % 16;
      if (remainder < 10)
         hexadecimalnum[j++] = 48 + remainder;
  else
         hexadecimalnum[j++] = 55 + remainder;
  quotient = quotient / 16;
   }

   // display integer into character
  for (i = j; i >= 0; i--)
         printf("%c", hexadecimalnum[i]);
   return 0;
}
```

OUTPUT :-

```
Enter decimal number: 25 20
19
```

22. Write a C program to display first 5 Armstrong number. #include<stdio.h>

```
#include <stdio.h>

int main() {
   int n, r = 0, sum = 0, temp, i;

   for (i = 1; i <= 500; i++) {
      temp = i;
      sum = 0;

      while (temp > 0) {
         r = temp % 10;
         sum = sum + (r * r * r);
         temp = temp / 10;
      }
```

```
        if (i == sum)
            printf("Armstrong number: %d\n", i);
    }

    return 0;
}
```

OUTPUT :-

```
arm=1
arm=153
arm=370
arm=371
arm=407
```

23. Write a C program to arrange the accepted numbers in ascending order and descending order.

```
#include <stdio.h>
#include <conio.h>

int main()
{
    int i, j, temp, a[100], n;

    clrscr(); // Clear screen (works only in Turbo C or old DOS compilers)

    printf("How many numbers you want to enter: ");
    scanf("%d", &n);

    for(i = 0; i < n; i++)
    {
        printf("Enter number %d: ", i + 1);
        scanf("%d", &a[i]);
    }

    // Sorting in ascending order using Bubble Sort
    for(i = 0; i < n - 1; i++)
    {
        for(j = i + 1; j < n; j++)
        {
            if(a[i] > a[j])
            {
                temp = a[i];
                a[i] = a[j];
                a[j] = temp;
            }
        }
    }

    printf("\nAscending Order = ");
    for(i = 0; i < n; i++)
    {
```

```
      printf("%d\t", a[i]);
   }

   printf("\nDescending Order = ");
   for(i = n - 1; i >= 0; i--)
   {
      printf("%d\t", a[i]);
   }

   getch(); // Wait for key press (used in Turbo C)
   return 0;
}
```

OUTPUT :-

```
How many numbers you want to enter: 5
Enter number 1: 22
Enter number 2: 11
Enter number 3: 5
Enter number 4: 67
Enter number 5: 34

Ascending Order = 5    11    22    34    67
Descending Order = 67    34    22    11    5
```

24. Write a C program to find whether the accepted string is palindrome or not.

```
#include <stdio.h>
#include <string.h>
#include <conio.h>

int main()
{
   int i, l, j = 0;
   char s1[100], s2[100];

   clrscr(); // Clears screen (only works in Turbo C/C++)

   printf("Enter the value of s1: ");
   gets(s1); // NOTE: unsafe, better to use fgets() in modern C

   l = strlen(s1);
```

```
    for(i = l - 1; i >= 0; i--)
    {
       s2[j] = s1[i];
       j++;
    }

    s2[j] = '\0'; // Null terminate reversed string

    if(strcmp(s1, s2) == 0)
       printf("It is a palindrome");
    else
       printf("It is not a palindrome");

    getch();  // Wait for key press (Turbo C/C++ only)
    return 0;
}
```

OUTPUT :-

```
Enter the value of s1:=50
it is not palindrome
```

25. Write a C program to convert given line into upper case or lowercase.

```
#include <stdio.h>
#include <conio.h>
#include <string.h>
#include <ctype.h>

void main()
{
   char s[100];
   int i, n, choice;

   clrscr(); // Clears screen (works in Turbo C/C++)

   printf("Enter String ==> ");
   gets(s); // Warning: gets() is unsafe, use fgets() in modern C

   n = strlen(s);

   printf("1 --> For Lower to Upper\n");
   printf("2 --> For Upper to Lower\n");
   printf("Enter Your Choice: ");
   scanf("%d", &choice);

   printf("Result String is --> ");

   switch(choice)
   {
      case 1:
         for(i = 0; i < n; i++)
         {
            if(islower(s[i]))
               putchar(toupper(s[i]));
            else
               putchar(s[i]);
         }
         break;

      case 2:
         for(i = 0; i < n; i++)
         {
            if(isupper(s[i]))
               putchar(tolower(s[i]));
            else
               putchar(s[i]);
         }
         break;

      default:
```

```
        clrscr();
        printf("Error in Choice");
        break;
    }

    getch(); // Waits for key press
                }
```

Output:

```
Enter String ==> HelloWorlD
1 --> For Lower to Upper
2 --> For Upper to Lower
Enter Your Choice: 1
Result String is --> HELLOWORLD
```

```
#include<stdio.h>
#include<conio.h>

int main()
{
  int word, tab, chr, line, space;
  char c;

  clrscr(); // Clear screen (Turbo C-specific)

  word = tab = chr = line = space = 0;
  line++; // Start counting lines from 1

  printf("\nEnter Any lines of Text-->");

  while ((c = getchar()) != EOF) // Read input until Ctrl+Z (Windows) or Ctrl+D (Unix)
is pressed
  {
    chr++; // Count every character

    if (c == ' ')
    {
      space++;
      word++;
    }
    else if (c == '\t')
    {
      tab++;
      word++;
    }
    else if (c == '\n')
    {
      line++;
      word++;
    }
  }

  // Output results
  printf("\n Total nos. of Characters = %d", chr);
  printf("\n Total nos. of Tabs      = %d", tab);
  printf("\n Total nos. of Spaces    = %d", space);
  printf("\n Total nos. of Words     = %d", word);
  printf("\n Total nos. of Lines     = %d", line);

  getch(); // Wait for keypress (Turbo C-specific)
}
```

Output:
Hello world
This is a test.

Total nos. of Characters = 28
Total nos. of Tabs = 0
Total nos. of Spaces = 5
Total nos. of Words = 7
Total nos. of Lines = 3

27. Write a C program to display following output on the screen.

1

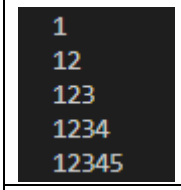
12

123

1234

```
#include <stdio.h> int
main()
{   int i, j;
  for(i=1;i<=5;i++)
  {
    for(j=1;j<=i;j++)
    {
      printf("%d",j);
    }
    printf("\n");
  }
  return 0;
}
```

OUTPUT :-



28. Write a C program to display following output on the screen.

0

0 1

1 0 1

0 1 0 1

1 0 1 0 1

```
#include <stdio.h> int
main()
{   int i, j;
  for(i=1;i<=5;i++)
  {
    for(j=i;j>=1;j--)
    {
      printf("%d",j%2);
    }
    printf("\n");
  }
  return 0;
}
```

OUTPUT :-

```
1
01
101
0101
10101
```

29. Write a C program to display following output on the screen.

1

22

3 3 3

4 4 4 4

```
#include <stdio.h> int
main()
{   int i, j;
  for(i=1;i<=5;i++)
  {
    for(j=i;j>=1;j--)
    {
      printf("%d",i);
    }
    printf("\n");
  }
  return 0;
}
```

OUTPUT :-

```
1
22
333
4444
55555
```

30. Write a C program to find maximum & minimum value from the given array.

```
#include <stdio.h>

int main()
{
   int a[1000], i, n, min, max;

   printf("Enter size of the array: ");
   scanf("%d", &n);

   for(i = 0; i < n; i++) {
      printf("Enter number %d: ", i);
      scanf("%d", &a[i]);
   }

   min = max = a[0];
   for(i = 0; i < n; i++)
   {
      if(min > a[i])
         min = a[i];
      if(max < a[i])
         max = a[i];
   }

   printf("Minimum of array is: %d", min);
   printf("\nMaximum of array is: %d", max);
   return 0;
}
```

OUTPUT :-

```
Enter size of the array : 5
Enter number0: 2
Enter number1: 5
Enter number2: 8
Enter number3: 6
Enter number4: 4
minimum of array is : 2
maximum of array is : 8
```