Practical

Objective:- Hello world in different languages

Programming C :-

```
1. #include<stdio.h>
2.
3. int main(void)
4. {
5.     printf("Hello, world!");
6.
7. getch();
8. }
```

Programming C++ :-

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

2. int main()
3. {
4. std::cout << "Hello, world!
5. ";
6. return 0;
7. }
```

Programming Java:-

```
1. class HelloWorld {
2. public static void main(String[] args) {
3. System.out.println("Hello, World!");
4. }
5. }
```

MATLAB:-

```
1. disp('Hello, world!')
```

PYTHON:

```
1. print "Hello, world!"
```

Practical no-2

Object: . To calculate all prime numbers between two Integers

/* Program in c ,to clalculate all prime no*/

```
#include <stdio.h>
int main() {
int low, high, i, flag;
printf("Enter two numbers(intervals): ");
scanf("%d %d", &low, &high);
printf("Prime numbers between %d and %d are: ", low, high);
// iteration until low is not equal to high
while (low < high) {
flag = 0;
    // ignore numbers less than 2
    if (low <= 1) {
    ++low;
    continue;
    }
    // if low is a non-prime number, flag will be 1
    for (i = 2; i <= low / 2; ++i) {
    if (low % i == 0) {
        a. flag = 1;
        b. break;
    }
    }
    if (flag == 0)
    printf("%d ", low);
    // to check prime for the next number
    // increase low by 1
    ++low;
    }
    return 0;
    }
```

Output:-

Enter two numbers(intervals): 0

1000

Prime numbers between 0 and 1000 are: 2 3 5 7 11 13 17 19 23 29 31 37 41 43 47 53 59 61 67 71 73 79 83 89 97 101 103 107 109 113 127 131 137 139 149 151 157 163 167 173 179 181 191 193 197 199 211 223 227 229 233 239 241 251 257 263 269 271 277 281 283 293 307 311 313 317 331 337 347 349 353 359 367 373 379 383 389 397 401 409 419 421 431 433 439 443 449 457 461 463 467 479 487 491 499 503 509 521 523 541 547 557 563 569 571 577 587 593 599 601 607 613 617 619 631 641 643 647 653 659 661 673 677 683 691 701 709 719 727 733 739 743 751 757 761 769 773 787 797 809 811 821 823 827 829 839 853 857 859 863 877 881 883 887 907 911 919 929 937 941 947 953 967 971 977 983 991 997

Practiacal no-3

Object:- Write about FORTRAN, COBOL Programming Langauges

FORTAN: Fortan is a computer programming language that is extensively used in numerical, scientific computing. While outwith the scientific community, Fortran has declined in popularity over the years, it still has a strong user base with scientific programmers, and is also used in organisations such as weather forecasters, financial trading, and in engineering simulations. Fortran programs can be highly optimised to run on high performance computers, and in general the language is suited to producing code where performance is important.

Fortran is a *compiled* language, or more specifically it is compiled ahead-of-time. In other words, you must perform a special step called compilation of your written code before you are able to run it on a computer. This is where Fortran differs to interpreted *l*anguages such as Python and R which run through an interpreter which executes the instructions directly, but at the cost of compute speed.

//PROGRAM(https://ourcodingclub.github.io/tutorials/fortran-intro/)

```
1.  PROGRAM  HeronFormula
2.  IMPLICIT  NONE
3.  REAL     :: a, b, c           ! three sides
4.  REAL     :: s                 ! half of perimeter
5.  REAL     :: Area              ! triangle area
6.  LOGICAL  :: Cond_1, Cond_2    ! two logical conditions
7.  READ(*,*)  a, b, c
8.  WRITE(*,*)  "a = ", a
9.  WRITE(*,*)  "b = ", b
10. WRITE(*,*)  "c = ", c
11. WRITE(*,*)
12. Cond_1 = (a > 0.) .AND. (b > 0.) .AND. (c > 0.0)
13. Cond_2 = (a + b > c) .AND. (a + c > b) .AND. (b + c > a)
14. IF (Cond_1 .AND. Cond_2) THEN
15.    s    = (a + b + c) / 2.0
16.           Area = SQRT(s * (s - a) * (s - b) * (s - c))
```

```
17.     WRITE(*,*) "Triangle area = ", Area
18.   ELSE
19.     WRITE(*,*) "ERROR: this is not a triangle!"
20.   END IF
21.
22.END PROGRAM  HeronFormula
23.
```

COBOL:

COBOL stands for Common Business Oriented Language.The US Department of Defense, in a conference, formed CODASYL (Conference on Data Systems Language) to develop a language for business data processing needs which is now known as COBOL.

COBOL is used for writing application programs and we cannot use it to write system software. The applications like those in defense domain, insurance domain, etc. which require huge data processing make extensive use of COBOL.

//COBOL hello world program

```
IDENTIFICATION DIVISION.
PROGRAM-ID. HELLO.

PROCEDURE DIVISION.
  DISPLAY 'Hello World'.
STOP RUN.
```

Practical no-5

Objective:- In java, write a function that takes an integer argument called n and returns integer

Recursion Method

In this section, we will learn to write methods which can return something.
First see an example:

```
class Add{
  public static int add_int(int x,int y){
    return x+y;
  }
  public static void main(String[] args){
    int z;
    z = add_int(2,4);
    System.out.println(z);
  }
}
```

Output:-6

add_int(int x,int y) - This part of code should be clear that 'add_int' is the name of method and it is taking two parameters of type int.
int add_int(int x,int y) - 'int' before the method name means that this method will return an

integer. i.e. we will get some integer value whenever we will call this method.
return x+y; - This part returns an integer having the value 'x+y' since our method has to return an integer.

Prcatical no-5

Object: 5. Arithmetic operations on complex numbers

```
#include <stdio.h>
#include <stdlib.h>
struct complex
{
int real, img;
};
int main()
{
  int choice, x, y, z;
  struct complex a, b, c;
  while(1)
  {
    printf("Press 1 to add two complex numbers.\n");
    printf("Press 2 to subtract two complex numbers.\n");
    printf("Press 3 to multiply two complex numbers.\n");
    printf("Press 4 to divide two complex numbers.\n");
    printf("Press 5 to exit.\n");
    printf("Enter your choice\n");
    scanf("%d", &choice);
    if (choice == 5)
```

```
  exit(0);
if (choice >= 1 && choice <= 4)
{
  printf("Enter a and b where a + ib is the first complex number.");
  printf("\na = ");
  scanf("%d", &a.real);
  printf("b = ");
  scanf("%d", &a.img);
  printf("Enter c and d where c + id is the second complex number.");
  printf("\nc = ");
  scanf("%d", &b.real);
  printf("d = ");
  scanf("%d", &b.img);
}
if (choice == 1)
{
  c.real = a.real + b.real;
  c.img = a.img + b.img;
  if (c.img >= 0)
    printf("Sum of the complex numbers = %d + %di", c.real, c.img);
  else
    printf("Sum of the complex numbers = %d %di", c.real, c.img);
}
```

```
else if (choice == 2)
{
  c.real = a.real - b.real;
  c.img = a.img - b.img;
  if (c.img >= 0)
    printf("Difference of the complex numbers = %d + %di", c.real, c.img);
  else
    printf("Difference of the complex numbers = %d %di", c.real, c.img);
}
else if (choice == 3)
{
  c.real = a.real*b.real - a.img*b.img;
  c.img = a.img*b.real + a.real*b.img;
  if (c.img >= 0)
    printf("Multiplication of the complex numbers = %d + %di", c.real, c.img);
  else
    printf("Multiplication of the complex numbers = %d %di", c.real, c.img);
}
else if (choice == 4)
{
  if (b.real == 0 && b.img == 0)
    printf("Division by 0 + 0i isn't allowed.");
  else
```

```
{
  x = a.real*b.real + a.img*b.img;
  y = a.img*b.real - a.real*b.img;
  z = b.real*b.real + b.img*b.img;
  if (x%z == 0 && y%z == 0)
  {
    if (y/z >= 0)
      printf("Division of the complex numbers = %d + %di", x/z, y/z);
    else
      printf("Division of the complex numbers = %d %di", x/z, y/z);
  }
  else if (x%z == 0 && y%z != 0)
  {
    if (y/z >= 0)
      printf("Division of two complex numbers = %d + %d/%di", x/z, y, z);
    else
      printf("Division of two complex numbers = %d %d/%di", x/z, y, z);
  }
  else if (x%z != 0 && y%z == 0)
  {
    if (y/z >= 0)
      printf("Division of two complex numbers = %d/%d + %di", x, z, y/z);
    else
```

```
            printf("Division of two complex numbers = %d %d/%di", x, z, y/z);
        }
        else
        {
          if (y/z >= 0)
            printf("Division of two complex numbers = %d/%d + %d/%di",x, z, y, z);
          else
            printf("Division of two complex numbers = %d/%d %d/%di", x, z, y, z);
        }
      }
    }
    else
      printf("Invalid choice.");
    printf("\nPress any key to enter choice again...\n");
  }
}
```

Output:-

Press 1 to add two complex numbers.

Press 2 to subtract two complex numbers.

Press 3 to multiply two complex numbers.

Press 4 to divide two complex numbers.

Press 5 to exit.

Enter your choice

1

Enter a and b where a + ib is the first complex number.

a = 12

b = 23

Enter c and d where c + id is the second complex number.

c = 34

d = 11

Sum of the complex numbers = 46 + 34i

Press any key to enter choice again...

Press 1 to add two complex numbers.

Press 2 to subtract two complex numbers.

Press 3 to multiply two complex numbers.

Press 4 to divide two complex numbers.

Press 5 to exit.

Enter your choice

5