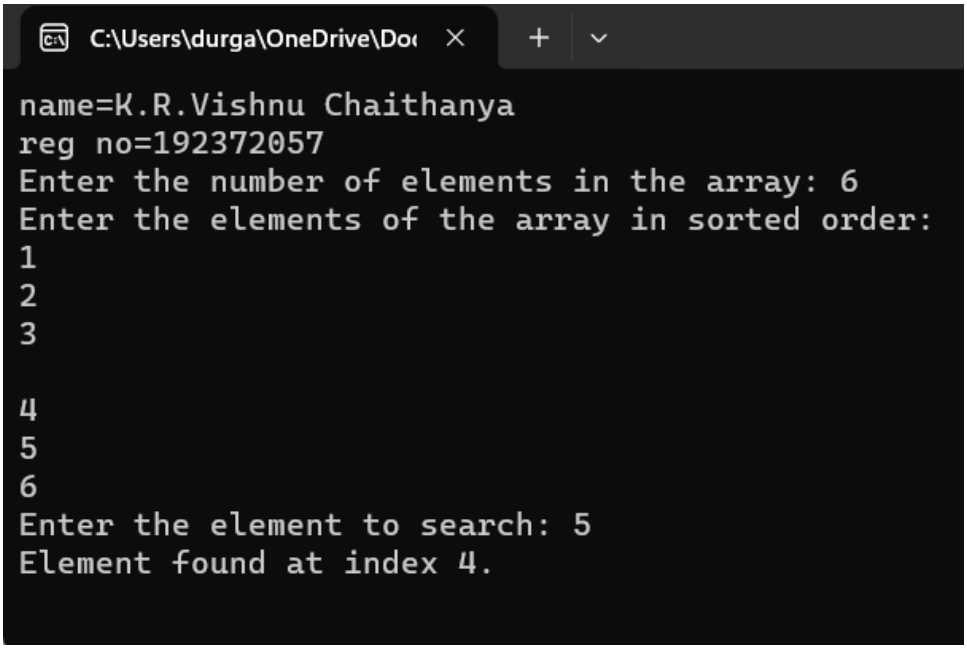
05 March 2024 17:45

BINARY SEARCH

```
#include <stdio.h>

int main() {
   int arr[100], n, key, low, high, mid;
   printf("name=K.R.Vishnu Chaithanya \n");
  printf("reg no=192372057\n");
   printf("Enter the number of elements in the array: ");
   scanf("%d", &n);

   printf("Enter the elements of the array in sorted order:\n");
   for(int i = 0; i < n; i++) {
      scanf("%d", &arr[i]);
   }

   printf("Enter the element to search: ");
   scanf("%d", &key);

   low = 0;
   high = n - 1;

   while(low <= high) {
      mid = (low + high) / 2;

      if(arr[mid] == key) {
         printf("Element found at index %d.\n", mid);
         return 0;
      }
      else if(arr[mid] < key) {
         low = mid + 1;
      }
      else {
         high = mid - 1;
      }
   }

   printf("Element not found in the array.\n");
   return 0;
}
```



FIBONACCI SUM

```
#include <stdio.h>

int main() {
    int n;
    long long int fib1 = 0, fib2 = 1, nextTerm, sum = 0;
  printf("name=K.R.Vishnu Chaithanya \n");
   printf("reg no=192372057\n");
    printf("Enter the number of terms: ");
    scanf("%d", &n);

    printf("Fibonacci Series: ");

    for (int i = 1; i <= n; ++i) {
        printf("%lld, ", fib1);
        sum += fib1;
        nextTerm = fib1 + fib2;
        fib1 = fib2;
        fib2 = nextTerm;
    }

    printf("\nSum of Fibonacci Series: %lld\n", sum);

    return 0;
}
```

```
name=K.R.Vishnu Chaithanya
reg no=192372057
Enter the number of terms: 5
Fibonacci Series: 0, 1, 1, 2, 3,
Sum of Fibonacci Series: 7

--------------------------------
Process exited after 5.066 seconds with retu
Press any key to continue . . .
```

FACTORIAL OF A GIVEN NUMBER

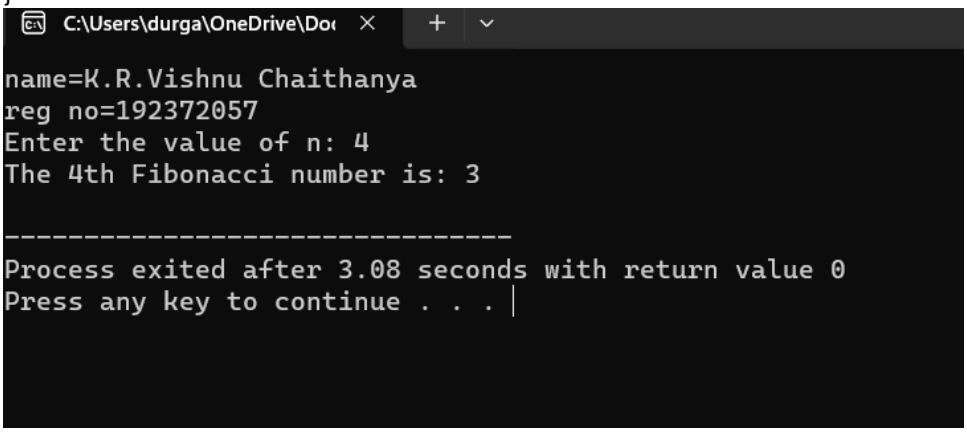
```
#include <stdio.h>

int main() {
   int num;
    printf("name=K.R.Vishnu Chaithanya \n");
  printf("reg no=192372057\n");
   printf("Enter a number: ");
   scanf("%d", &num);

   int factorial = 1;

   if (num < 0) {
      printf("Factorial is not defined for negative numbers.\n");
   } else {
      for (int i = 1; i <= num; i++) {
         factorial *= i;
      }
      printf("Factorial of %d is %d\n", num, factorial);
   }

   return 0;
}
```

```
name=K.R.Vishnu Chaithanya
reg no=192372057
Enter a number: 5
Factorial of 5 is 120

--------------------------------
Process exited after 2.83 seconds with return value 0
Press any key to continue . . .
```

FIBONACCI USING RECURSION

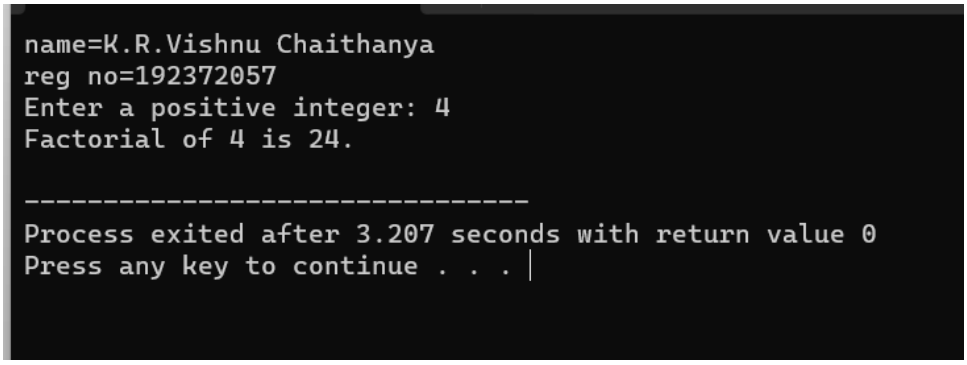
```
#include <stdio.h>

 int fibonacci(int n) {
   if (n <= 1)
      return n;
   else
```

```
    return fibonacci(n - 1) + fibonacci(n - 2);
}

int main() {
   int n;
    printf("name=K.R.Vishnu Chaithanya \n");
  printf("reg no=192372057\n");
   printf("Enter the value of n: ");
   scanf("%d", &n);

   printf("The %dth Fibonacci number is: %d\n", n, fibonacci(n));

   return 0;
}
```



FACTORIAL USING RECURSION

```
#include <stdio.h>

 int factorial(int n) {
   if (n == 0 || n == 1) {
      return 1;
   } else {
      return n * factorial(n - 1);
   }
}

int main() {
   int num;
  printf("name=K.R.Vishnu Chaithanya \n");
  printf("reg no=192372057\n");
   printf("Enter a positive integer: ");
   scanf("%d", &num);

    if (num < 0) {
      printf("Factorial is not defined for negative numbers.\n");
   } else {
      int fact = factorial(num);
      printf("Factorial of %d is %d.\n", num, fact);
   }

   return 0;
}
```



LINEAR SEARCH

```
#include <stdio.h>

int main() {
   int arr[100];
   int N, target;
 printf("name=K.R.Vishnu Chaithanya \n");
  printf("reg no=192372057\n");
   printf("Enter the size of the array: ");
   scanf("%d", &N);

   printf("Enter %d elements:\n", N);
   for (int i = 0; i < N; i++) {
      scanf("%d", &arr[i]);
   }

   printf("Enter the element to search: ");
   scanf("%d", &target);


   int found = 0;
   for (int i = 0; i < N; i++) {
      if (arr[i] == target) {
         found = 1;
         printf("Element found at index %d\n", i);
         break;
      }
   }

   if (!found) {
      printf("Element not found in the array\n");
   }

   return 0;
}
```

```
name=K.R.Vishnu Chaithanya
reg no=192372057
Enter the size of the array: 5
Enter 5 elements:
1 2 3 4 5
Enter the element to search: 5
Element found at index 4

--------------------------------
Process exited after 17.43 seconds with return value 0
Press any key to continue . . .
```