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| **Experiment No.** | 1 |

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| **AIM:** | Programs on Encapsulation. Write a program to demonstrate classes and objects |
| **Program 1** | |
| **PROBLEM STATEMENT:** | Write a program to find all prime numbers in the given range and print them. Also, print the told no. of prime numbers. Use concept of class & Objects. |
| **PROGRAM:** | //find the prime numbers in an given range  import java.util.\*;  public class prime {  public static int FindPrime(int n) {  if (n == 0 || n == 1) {  return 0;  }  for (int i = 2; i < n; i++) {  if (n % i == 0) {  return 0;  }  }  return 1;  }  public static void main(String[] args) {  prime obj = new prime();  Scanner scanner = new Scanner(System.in);  System.out.print("Enter the lower range of the prime number: ");  int lower = scanner.nextInt();  System.out.print("Enter the upper range of the prime number: ");  int upper = scanner.nextInt();  int count = 0;  for (int i = lower; i <= upper; i++) {  if (obj.FindPrime(i) == 1) {  System.out.print(i + " ");  count++;  }  }  System.out.println("\nNo. of prime numbers: " + count);  }  } |
| **RESULT:** | |
| **Program 2** | |
| **PROBLEM STATEMENT:** | A Mersenne prime is a prime number that has the form 2p−1 where p is a positive number greater than 1. Write a program that calculates candidate Mersenne primes 2p − 1 for 2≤p≤31. Then test the number to see if it is prime. If you detect that the number is prime, print out the number and the value of p. |
| **PROGRAM:** | import java.util. \*;  import java.lang.Math;  public class MPrime {  public int CheckPrime(double n) {  if (n==0 || n==1) {  return 0;  }  for (int i=2;i<=Math.sqrt(n);i++) {  if (n%i==0) {  return 0;  }  }  System.out.print((int)n+" ");  return 1;  }  public static void main(String[] args) {  MerPrime obj = new MerPrime();  double a;  for(int i=2;i<=31;i++) {  a = Math.pow(2.0,(double)i)-1.0;  obj.CheckPrime(a);  }  }  } |
| **RESULT:** | |
| **Program 3** | |
| **PROBLEM STATEMENT:** | To write a java program to print grade of the student  1. 75% and above - Distinction  2. 60% to 74% - first class  3. 45% to 59% - second class  4. below 44% - fail class |
| **PROGRAM:** | import java.util.\*;  public class grade  {  public static void main(String[] args) {  int grade;  Scanner scanner= new Scanner(System.in);  do{  System.out.print("Enter the percentage of the student: ");  int perc = scanner.nextInt();  if(perc>=75) {  System.out.println("Grade: Distinction");  } else if(perc>=60) {  System.out.println("Grade: First Class");  } else if(perc>=45) {  System.out.println("Grade: Second Class");  } else {  System.out.println("Grade: Fail");  }  System.out.println("Do you want to continue? (y=1/n=0)");  }while(scanner.nextInt()!=0);  }  } |
| **RESULT:** | |
| **Program 4** | |
| **PROBLEM STATEMENT:** | Find GCD of Two Numbers Using for Loop |
| **PROGRAM:** | import java.util.\*;  public class gcd{  public static void main(String[] args) {  int grade;  System.out.print("Enter the numbers: ");  Scanner scanner= new Scanner(System.in);  int a= scanner.nextInt();  int b= scanner.nextInt();  int i;  int gcd=1;//prime no. ka gcd=1  if(a>b)  {  for(i=2;i<=b;i++)  {  if(a%i==0 && b%i==0)  {  gcd=i;    }  }  }  else if(b>a)  {  for(i=2;i<=b;i++)  {  if(a%i==0 && b%i==0)  {  gcd=i;    }  }  }  System.out.println("The GCD of the numbers: " +gcd);  }  } |
| **RESULT:** | |
| **CONCLUSION:** | In this experiment, we learned about the basic programs in java by using control flow statements and loops. |