|  |  |
| --- | --- |
| **Program #1\_1** | **Date: 07/12/2023** |
| **Write a program to print ‘Welcome to Java’.** | |

**Source Code:**

|  |
| --- |
| //PROGRAM 1\_1: Write a program to print ‘Welcome to Java’.  public class P1\_1\_welcome\_to\_java{  public static void main(String args[]){  System.out.println("Muhammad Anshad P A");  System.out.println("Welcome to Java.");  }  } |

**OUTPUT:**

|  |
| --- |
| Microsoft Windows [Version 10.0.19045.3693]  (c) Microsoft Corporation. All rights reserved.  C:\Users\marsh>E:  E:\>cd MCA\SEM 2\JAVA PROGRAMMING (MCA202)  E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)>javac P1\_1\_welcome\_to\_java.java  E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)>java P1\_1\_welcome\_to\_java  Muhammad Anshad P A  Welcome to Java.  E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)> |

|  |  |
| --- | --- |
| **Program #1\_2** | **Date: 07/12/2023** |
| **WAP to display two numbers received as command line argument, and print its product.** | |

**Source Code:**

|  |
| --- |
| //PROGRAM 1\_2: WAP to display two numbers received as command line argument, and print its product.  import java.io.\*;  public class P1\_2\_product\_of\_two\_no{  public static void main(String args[]){  System.out.println("Muhammad Anshad P A");  DataInputStream din;  int a,b;  String s;  din = new DataInputStream(System.in);  try{  System.out.println("\nEnter the first number : ");  s=din.readLine();  a=Integer.parseInt(s);  System.out.println("\nEnter second number : ");  s=din.readLine();  b=Integer.parseInt(s);  System.out.println("\nEntered two numbers are : "+a+" and "+b);  System.out.println("\nThe product of given two numbers = "+(a\*b));  }  catch(Exception e){  System.out.println("Error : "+e);  }    }  } |
|  |

**OUTPUT:**

|  |
| --- |
| Microsoft Windows [Version 10.0.19045.3693]  (c) Microsoft Corporation. All rights reserved.  C:\Users\marsh>E:  E:\>cd MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB  E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB>javac P1\_2\_product\_of\_two\_no.java  Note: P1\_2\_product\_of\_two\_no.java uses or overrides a deprecated API.  Note: Recompile with -Xlint:deprecation for details.  E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB>java P1\_2\_product\_of\_two\_no  Muhammad Anshad P A  Enter the first number :  4  Enter second number :  3  Entered two numbers are : 4 and 3  The product of given two numbers = 12  E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB> |

|  |  |
| --- | --- |
| **Program #1\_3** | **Date: 07/12/2023** |
| **WAP to read two numbers and display the output in the form of ‘Sum of 2 and 3 is 5.** | |

**Source Code:**

|  |
| --- |
| //PROGRAM 1\_3: WAP to read two numbers and display the output in the form of ‘Sum of 2 and 3 is 5  import java.io.\*;  public class P1\_3\_disp\_sum{  public static void main(String args[]){  System.out.println("Muhammad Anshad P A");  DataInputStream din;  int a,b;  String s;  din = new DataInputStream(System.in);  try{  System.out.println("\nEnter the first number : ");  s=din.readLine();  a=Integer.parseInt(s);  System.out.println("\nEnter second number : ");  s=din.readLine();  b=Integer.parseInt(s);  System.out.println("\nSum of "+a+" and "+b+ " is "+(a+b));  }  catch(Exception e){  System.out.println("Error : "+e);  }  }  } |

**OUTPUT:**

|  |
| --- |
| E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB>javac P1\_3\_disp\_sum.java  Note: P1\_3\_disp\_sum.java uses or overrides a deprecated API.  Note: Recompile with -Xlint:deprecation for details.  E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB>java P1\_3\_disp\_sum  Muhammad Anshad P A  Enter the first number :  2  Enter second number :  3  Sum of 2 and 3 is 5 |

|  |  |
| --- | --- |
| **Program #1\_4** | **Date: 07/12/2023** |
| **WAP to accept two numbers from the keyboard and swap them.** | |

**Source Code:**

|  |
| --- |
| //PROGRAM 1\_4: WAP to accept two numbers from the keyboard and swap them.  import java.io.\*;  public class P1\_4\_swap{  public static void main(String args[]){  System.out.println("Muhammad Anshad P A");  DataInputStream din;  int a,b,temp;  String s;  din = new DataInputStream(System.in);  try{  System.out.println("\nEnter the first number : ");  s=din.readLine();  a=Integer.parseInt(s);  System.out.println("\nEnter second number : ");  s=din.readLine();  b=Integer.parseInt(s);  System.out.println("\nValues Before swapping:\na = "+a+"\nb = "+b);  temp=a;  a=b;  b=temp;  System.out.println("\nValues After swapping:\na = "+a+"\nb = "+b);    }  catch(Exception e){  System.out.println("Error : "+e);  }    }  } |

**OUTPUT:**

|  |
| --- |
| E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB>javac P1\_4\_swap.java  Note: P1\_4\_swap.java uses or overrides a deprecated API.  Note: Recompile with -Xlint:deprecation for details.  E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB>java P1\_4\_swap  Muhammad Anshad P A  Enter the first number :  9  Enter second number :  45  Values Before swapping:  a = 9  b = 45  Values After swapping:  a = 45  b = 9  E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB> |

|  |  |
| --- | --- |
| **Program # 2\_1** | **Date: 07/12/2023** |
| **WAP to read three numbers and the maximum.** | |

**Source Code:**

|  |
| --- |
| //PROGRAM 2\_1: WAP to read three numbers and the maximum.  import java.io.\*;  public class P2\_1\_maximum\_of\_3{  public static void main(String args[]){  System.out.println("Muhammad Anshad P A");  DataInputStream din;  int a,b,c;  String s;  din = new DataInputStream(System.in);  try{  System.out.println("\nEnter the first number : ");  s=din.readLine();  a=Integer.parseInt(s);  System.out.println("\nEnter second number : ");  s=din.readLine();  b=Integer.parseInt(s);  System.out.println("\nEnter third number : ");  s=din.readLine();  c=Integer.parseInt(s);  if(a>b && a>c){  System.out.println("Maximum number = "+a);  }  else if(b>a && b>c){  System.out.println("Maximum number = "+b);  }  else{  System.out.println("Maximum number = "+c);  }  }  catch(Exception e){  System.out.println("Error : "+e);  }    }  } |

**OUTPUT:**

|  |
| --- |
| E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB>javac P2\_1\_maximum\_of\_3.java  Note: P2\_1\_maximum\_of\_3.java uses or overrides a deprecated API.  Note: Recompile with -Xlint:deprecation for details.  E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB>java P2\_1\_maximum\_of\_3  Muhammad Anshad P A  Enter the first number :  46  Enter second number :  -48  Enter third number :  25  Maximum number = 46  E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB> |

|  |  |
| --- | --- |
| **Program # 2\_2** | **Date: 07/12/2023** |
| **Find the minimum of three numbers using a single statement.** | |

**Source Code:**

|  |
| --- |
| //PROGRAM 2\_2: Find the minimum of three numbers using a single statement.  import java.io.\*;  public class P2\_2\_minimum\_of\_3{  public static void main(String args[]){  System.out.println("Muhammad Anshad P A");  DataInputStream din;  int a,b,c,min;  String s;  din = new DataInputStream(System.in);  try{  System.out.println("\nEnter the first number : ");  s=din.readLine();  a=Integer.parseInt(s);  System.out.println("\nEnter second number : ");  s=din.readLine();  b=Integer.parseInt(s);  System.out.println("\nEnter third number : ");  s=din.readLine();  c=Integer.parseInt(s);  min= c<(a<b?a:b)?c:(b<a?b:a); //  System.out.println("Minimum number = "+min);    }  catch(Exception e){  System.out.println("Error : "+e);  }    }  } |

**OUTPUT:**

|  |
| --- |
| E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB>javac P2\_2\_minimum\_of\_3.java  Note: P2\_2\_minimum\_of\_3.java uses or overrides a deprecated API.  Note: Recompile with -Xlint:deprecation for details.  E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB>java P2\_2\_minimum\_of\_3  Muhammad Anshad P A  Enter the first number :  -25  Enter second number :  -45  Enter third number :  2  Minimum number = -45  E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB> |

|  |  |
| --- | --- |
| **Program # 2\_3** | **Date: 08/12/2023** |
| **WAP to search for a given element in an array.** | |

**Source Code:**

|  |
| --- |
| //PROGRAM 2\_3: WAP to search for a given element in an array.  import java.io.\*;  public class P2\_3\_array\_search{  public static void lsearch(int a[],int n,int s){  int i,flag=0;  for(i=0;i<n;i++){  if(a[i]==s){  flag=1;  break;  }  }  if(flag==1){  System.out.println("\nElement "+s+" found at index "+ i);  }  else{  System.out.println("\nElement Not found!");  }    }  public static void main(String args[]){  System.out.println("Muhammad Anshad P A");  DataInputStream din;  int a[],n,i,s;  din = new DataInputStream(System.in);  try{  System.out.println("\nEnter how many elements to read : ");  n=Integer.parseInt(din.readLine());  a =new int[n]; //array initialization  System.out.println("Enter "+n+" values : ");  for(i=0;i<n;i++){  a[i]=Integer.parseInt(din.readLine());  }  System.out.println("Displaying values : ");  for(i=0;i<n;i++){  System.out.println(a[i]);  }  //Search part  System.out.println("\nEnter the element to search : ");  s=Integer.parseInt(din.readLine());  lsearch(a,n,s); //calling function    }  catch(Exception e){  System.out.println("Error : "+e);  }    }  } |

**OUTPUT:**

|  |
| --- |
| E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB>javac P2\_3\_array\_search.java  Note: P2\_3\_array\_search.java uses or overrides a deprecated API.  Note: Recompile with -Xlint:deprecation for details.  E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB>java P2\_3\_array\_search  Muhammad Anshad P A  Enter how many elements to read :  5  Enter 5 values :  10  20  30  40  50  Displaying values :  10  20  30  40  50  Enter the element to search :  30  Element 30 found at index 2  E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB> |

|  |  |
| --- | --- |
| **Program # 2\_4** | **Date: 08/12/2023** |
| **WAP to sort elements in an array in ascending order.** | |

**Source Code:**

|  |
| --- |
| //PROGRAM 2\_4: WAP to sort elements in an array in ascending order.  import java.io.\*;  public class P2\_4\_array\_sort{  public static void sortarr(int a[],int n){  int i,j,temp;  for(i=0;i<n;i++){  for(j=i+1;j<n;j++){  if(a[i]>a[j]){  temp=a[i];  a[i]=a[j];  a[j]=temp;  }  }  }  System.out.println("\nSorted Successfully");  }  public static void disp(int a[],int n){  int i;  System.out.println("\nDisplaying array values : ");  for(i=0;i<n;i++){  System.out.println(a[i]);  }  }  public static void main(String args[]){  System.out.println("Muhammad Anshad P A");  DataInputStream din;  int a[],n,i;  din =new DataInputStream(System.in);  try{  System.out.println("\nEnter how many elements to read : ");  n =Integer.parseInt(din.readLine());  a = new int[n];//array  System.out.println("Enter "+n+" values : ");  for(i=0;i<n;i++){  a[i]=Integer.parseInt(din.readLine());  }  disp(a,n);  sortarr(a,n);  disp(a,n);  }  catch(Exception e){  System.out.println("Erorr : "+ e);  }  }  } |

**OUTPUT:**

|  |
| --- |
| E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB>javac P2\_4\_array\_sort.java  Note: P2\_4\_array\_sort.java uses or overrides a deprecated API.  Note: Recompile with -Xlint:deprecation for details.  E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB>java P2\_4\_array\_sort  Muhammad Anshad P A  Enter how many elements to read :  5  Enter 5 values :  25  5  10  15  2  Displaying array values :  25  5  10  15  2  Sorted Successfully  Displaying array values :  2  5  10  15  25  E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB> |

|  |  |
| --- | --- |
| **Program # 2\_5** | **Date: 08/12/2023** |
| **Write a program to print the row wise and column wise sum of a 2D array.** | |

**Source Code:**

|  |
| --- |
| //PROGRAM 2\_5: Write a program to print the row wise and column wise sum of a 2D array.  import java.io.\*;  public class P2\_5\_2Darray\_sum{  public static void main(String args[]){  System.out.println("Muhammad Anshad P A");  DataInputStream din;  din = new DataInputStream(System.in);  int rows,cols,rowsum,colsum,i,j;  int a[][];  a = new int[100][100];  try{  //READ 2D array:  System.out.println("\n2D array-->\nEnter the number of rows (MAX 100): ");  rows=Integer.parseInt(din.readLine());  System.out.println("\nEnter the number of columns (MAX 100): ");  cols=Integer.parseInt(din.readLine());  for(i=0;i<rows;i++){  System.out.println("\nEnter values of row "+(i+1));  for(j=0;j<cols;j++){  a[i][j]=Integer.parseInt(din.readLine());  }  }  System.out.println("\nSUM OF ROWS AND COLUMNS-->\n");  //Calculating SUM of rows and columns:  for(i=0;i<rows;i++){  rowsum=0;  for(j=0;j<cols;j++){  rowsum=rowsum+a[i][j];  System.out.print("\t"+a[i][j]);  }  System.out.println(" | "+rowsum);  }    for(i=0;i<cols;i++){  colsum=0;  for(j=0;j<rows;j++){  colsum=colsum+a[j][i];  }  System.out.print("\t"+colsum);  }  }  catch(Exception e){  System.out.println("Error "+e);  }  }  } |
|  |

**OUTPUT:**

|  |
| --- |
| E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB>javac P2\_5\_2Darray\_sum.java  Note: P2\_5\_2Darray\_sum.java uses or overrides a deprecated API.  Note: Recompile with -Xlint:deprecation for details.  E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB>java P2\_5\_2Darray\_sum  Muhammad Anshad P A  2D array-->  Enter the number of rows (MAX 100):  3  Enter the number of columns (MAX 100):  3  Enter values of row 1  1  2  3  Enter values of row 2  4  5  6  Enter values of row 3  7  8  9  SUM OF ROWS AND COLUMNS-->  1 2 3 | 6  4 5 6 | 15  7 8 9 | 24  12 15 18  E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB> |

|  |  |
| --- | --- |
| **Program # 3\_1** | **Date: 10/12/2023** |
| **WAP with two functions to check for an integer palindrome.**  **(Function1 should reverse the integer. Function2 should return 1,if it is a palindrome or else 0.)** | |

**Source Code:**

|  |
| --- |
| /\*PROGRAM 3\_1 : WAP with two functions to check for an integer palindrome.  (Function1 should reverse the integer. Function2 should return 1,if it is a palindrome or else 0.)\*/  import java.io.\*;  public class P3\_1\_integer\_palindrome{    //function to reverse the number:  public static int reverseNum(int num){  int digit,rev=0;  while(num!=0){  digit=num%10;  rev=(rev\*10)+digit;  num=num/10;  }  return rev; //returning reversed number .  }  //function to check given number is palindrome or not:  public static int palindromeChecker(int num){  int rev=reverseNum(num);  if(num == rev){  return 1;  }  else{  return 0;  }  }  public static void main(String args[]){  System.out.println("Muhammad Anshad P A");  DataInputStream din;  din = new DataInputStream(System.in);  try{  System.out.println("\nEnter an integer to check for palindrome:");  int num=Integer.parseInt(din.readLine());    if(palindromeChecker(num)==1){  System.out.println(num+" is a Palindrome.");  }  else{  System.out.println(num+" is NOT a Palindrome.");  }  }  catch(Exception e){  System.out.println("Error : "+e);  }  }  } |

**OUTPUT:**

|  |
| --- |
| E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB>javac P3\_1\_integer\_palindrome.java  Note: P3\_1\_integer\_palindrome.java uses or overrides a deprecated API.  Note: Recompile with -Xlint:deprecation for details.  E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB>java P3\_1\_integer\_palindrome  Muhammad Anshad P A  Enter an integer to check for palindrome:  73211237  73211237 is a Palindrome.  E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB> |

|  |  |
| --- | --- |
| **Program # 3\_2** | **Date: 10/12/2023** |
| **WAP to display numbers from m to n using single while loop.** | |

**Source Code:**

|  |
| --- |
| //PROGRAM 3\_2 : WAP to display numbers from m to n using single while loop.  import java.io.\*;  public class P3\_2\_disp\_m\_to\_n{  public static void disp(int m,int n){  int i=m;  System.out.println("\nDisplaying numbers from "+m+" To "+n+" : \n");  while(i<=n){  System.out.println(i);  i++;  }  }  public static void main(String[] args){  System.out.println("Muhammad Anshad P A");  DataInputStream din;  din = new DataInputStream(System.in);  int m,n;  try{  System.out.println("\nEnter value for m : ");  m = Integer.parseInt(din.readLine());  System.out.println("\nEnter value for n : ");  n= Integer.parseInt(din.readLine());  disp(m,n);  }  catch(Exception e){  System.out.println("\nError : "+e);  }  }  } |

**OUTPUT:**

|  |
| --- |
| E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB>javac P3\_2\_disp\_m\_to\_n.java  Note: P3\_2\_disp\_m\_to\_n.java uses or overrides a deprecated API.  Note: Recompile with -Xlint:deprecation for details.  E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB>java P3\_2\_disp\_m\_to\_n  Muhammad Anshad P A  Enter value for m :  -3  Enter value for n :  5  Displaying numbers from -3 To 5 :  -3  -2  -1  0  1  2  3  4  5  E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB> |

|  |  |
| --- | --- |
| **Program # 3\_3** | **Date: 10/12/2023** |
| **WAP to find the sum of the series 1+(1+2)+(1+2+3)+............ +(1+2+3+…+n) using a single while loop.** | |

**Source Code:**

|  |
| --- |
| //PROGRAM 3\_3 : WAP to find the sum of the series 1+(1+2)+(1+2+3)+............ +(1+2+3+…+n) using a single while loop.  import java.io.\*;  public class P3\_3\_sum\_of\_series {  public static void sumOfseries(int n){  int i=1,currsum=0,sum=0;  while(i<=n){  currsum=currsum+i;  sum=sum+currsum;  i++;  }  System.out.println("Sum of series is : "+sum);  }  public static void main(String[] args){  System.out.println("Muhammad Anshad P A");  DataInputStream din;  din = new DataInputStream(System.in);  try{  System.out.println("\nEnter the limit(n) : ");  int n =Integer.parseInt(din.readLine());  sumOfseries(n);  }  catch(Exception e){  System.out.println("\nError : "+e);  }  }  } |

**OUTPUT:**

|  |
| --- |
| E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB>javac P3\_3\_sum\_of\_series.java  Note: P3\_3\_sum\_of\_series.java uses or overrides a deprecated API.  Note: Recompile with -Xlint:deprecation for details.  E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB>java P3\_3\_sum\_of\_series  Muhammad Anshad P A  Enter the limit(n) :  3  Sum of series is : 10  E:\MCA\SEM 2\JAVA PROGRAMMING (MCA202)\JAVA LAB> |

|  |  |
| --- | --- |
| **Program # 3\_4** | **Date: 10/12/2023** |
| **WAP** | |

**Source Code:**

|  |
| --- |
| /\*PROGRAM 3\_4 |

**OUTPUT:**

|  |
| --- |
| E:\MCA\ |