**3 hours**

**1. Which of the following is a primitive data type in Java?**

A) String  
B) Array  
C) int  
D) Object

option - C

**2. What is the default value of a boolean variable in Java?**

A) true  
B) false  
C) 0  
D) null

option - B

**3. Which of the following is not a primitive data type in Java?**

A) char  
B) int  
C) float  
D) String

option - D

**4. How many bits does the int data type use in Java?**

A) 8  
B) 16  
C) 32  
D) 64

option - C

**5. What is the size of a char in Java?**

A) 8 bits  
B) 16 bits  
C) 32 bits  
D) 64 bits

option - B

**6. Which of the following is used to declare a constant variable in Java?**

A) static  
B) final  
C) const  
D) constant

option - B

**7. Which of the following data types is used to store decimal numbers?**

A) int  
B) float  
C) char  
D) boolean

option - B

**8. Which of the following can hold the largest value?**

A) int  
B) long  
C) short  
D) byte

option - B

**9. What is the range of the byte data type in Java?**

A) -128 to 127  
B) -256 to 255  
C) 0 to 255  
D) 0 to 65535

option - A

**10. Which keyword is used to declare a variable in Java?**

A) var  
B) let  
C) int  
D) define

option - A

**11. What is the result of 10 % 3 in Java?**

A) 0  
B) 1  
C) 2  
D) 3

option - A

**12. Which of the following operators is used for addition in Java?**

A) -  
B) \*  
C) /  
D) +

option - D

**13. Which of the following operators is used to compare two values for equality in Java?**

A) =  
B) ==  
C) !=  
D) <>

option - B

**14. What is the output of the expression 5 + 2 \* 3 in Java?**

A) 11  
B) 21  
C) 13  
D) 17

option - A

**15. Which operator is used for logical AND in Java?**

A) &  
B) &&  
C) ||  
D) !

option - B

**16. What does the += operator do in Java?**

A) Subtracts a value  
B) Adds a value  
C) Multiplies a value  
D) Divides a value

option - B

**17. What is the result of the expression true && false in Java?**

A) true  
B) false  
C) null  
D) 0

option - B

**18. Which of the following is the correct way to increment a variable i by 1?**

A) i = i + 1  
B) i += 1  
C) i++  
D) All of the above

option - C

**19. Which of the following operators is used to find the remainder in division?**

A) %  
B) /  
C) \*  
D) //

option - A

**20. Which operator is used for bitwise OR in Java?**

A) ||  
B) |  
C) &  
D) ^

option - A

**21. What is a static variable in Java?**

A) A variable that is created in a static method  
B) A variable that is shared among all instances of a class  
C) A variable that can be modified only once  
D) A variable that is local to a method

option - B

**22. How do you access a static variable?**

A) Using the class name  
B) Using the object of the class  
C) Using the super keyword  
D) Using the this keyword

option - A

**23. When is a static variable initialized?**

A) When the class is loaded  
B) When an object of the class is created  
C) When the method is called  
D) When the program starts

option - A

**24. What is the purpose of a static block in Java?**

A) To execute code once before any object is created  
B) To define instance variables  
C) To initialize local variables  
D) To create a constructor

**25. Can a static variable be accessed in a non-static method?**

A) Yes  
B) No  
C) Only in a specific scenario  
D) Only if it is public

option - B

**26. What will happen if you try to access a non-static variable from a static context?**

A) It will compile without error  
B) It will throw a compile-time error  
C) It will execute with an exception  
D) It will automatically convert to static

option - B

**27. Which of the following is true about static methods?**

A) They can only access static variables  
B) They can access instance variables  
C) They cannot be overridden  
D) They are inherited by subclasses

**28. How many static blocks can a class have in Java?**

A) One  
B) Two  
C) Any number  
D) None

option - C

**29. What is the correct syntax to declare a static variable?**

A) static int x;  
B) int static x;  
C) final static int x;  
D) int x static;

option - **A**

**30. What is the primary use of static variables in Java?**

A) To store shared values  
B) To hold constant values  
C) To store local values  
D) To manage memory allocation

option - A

**1. Write a program to declare and initialize variables of all primitive data types in Java and print their values.**

**public class PrimitiveDataType**

**{**

**public static void main(String[] args)**

**{**

**char ch = 'M';**

**int i = 23;**

**double d = 44.000;**

**float f = 5.78f;**

**byte b = 6;**

**short s = 30;**

**long l = 100;**

**boolean bl = true;**

**System.out.println("ch :"+ch);**

**System.out.println("int :"+i);**

**System.out.println("double :"+d);**

**System.out.println("float :"+f);**

**System.out.println("byte :"+b);**

**System.out.println("short :"+s);**

**System.out.println("long :"+l);**

**System.out.println("boolean :"+bl);**

**}**

**}**

**2. Write a program to swap the values of two variables without using a third variable.**

public class SwapTwo

{

public static void main(String[] args)

{

int x = 28;

int y = 7;

System.out.println("before swapping "+x+" "+y);

x = x+y;

y = x-y;

x = x-y;

System.out.println("After Swapping :"+x+" "+y);

}

}

**3. Write a program to calculate the sum, difference, product, and quotient of two float numbers.**

**4. Write a program to find the largest of three numbers using the ternary operator.**

**5. Write a program to demonstrate the use of the logical AND (&&) operator by checking if a number is divisible by both 2 and 3.**

**6. Write a program to increment a variable using both the prefix (++i) and postfix (i++) increment operators and print the results.**

**public class IncPrePost**

**{**

**public static void main(String[] args)**

**{**

**int a = 6;**

**int b = 7;**

**System.out.println(a++);**

**System.out.println(++b);**

**}**

**}**

**7. Write a program to demonstrate the use of the bitwise AND (&) and OR (|) operators on two integer values.**

public class BitwiseOperator

{

public static void main(String[] args)

{

int a = 7;

int b = 6;

System.out.println("AND operator :"+(a&b));

System.out.println("OR operator :"+(a|b));

}

}

**8. Write a program to demonstrate operator precedence by evaluating a complex arithmetic expression.**

**9. Write a Java program to check if a number is positive, negative, or zero using an if-else statement.**

**public class PosNegZero**

**{**

**public static void main(String[] args)**

**{**

**Scanner sc = new Scanner(System.in);**

**System.out.println("Enter the number");**

**int number = sc.nextInt();**

**if(number>0)**

**{**

**System.out.println("Given number is Positive :"+number);**

**}**

**else if(number<0)**

**{**

**System.out.println("Given number is negative :"+number);**

**}**

**else**

**{**

**System.out.println("Given number is zero :"+number);**

**}**

**}**

**}**

**10. Write a Java program to find the largest of three numbers using nested if-else statements.**

**public class Lar3NumNestedIfElse**

**{**

**public static void main(String[] args)**

**{**

**int x = 6, y = 28, z = 7;**

**if(x>y)**

**{**

**System.out.println("x is the largest number :"+x);**

**}**

**else if(y>z)**

**{**

**System.out.println("y is the largest number :"+y);**

**}**

**else**

**{**

**System.out.println("z is the largest number :"+z);**

**}**

**}**

**}**

**11. Write a Java program that checks whether a given year is a leap year or not using an if-else statement.**

**public class LeapYear**

**{**

**public static void main(String[] args)**

**{**

**int year = 2023;**

**if(year%4==0)**

**{**

**System.out.println("Given year is an leap year :"+year);**

**}**

**else**

**{**

**System.out.println("Given year is not a leap year ");**

**}**

**}**

**}**

**12. Write a Java program to check if a given number is positive, negative, or zero using the conditional (ternary) operator.**

**13. Write a Java program to determine if a person is eligible to vote based on their age using an if-else statement.**

**public class VoteEligible**

**{**

**public static void main(String[] args)**

**{**

**int age = 16;**

**if(age>=18)**

**{**

**System.out.println("You are eligible to vote :"+age);**

**}**

**else**

**{**

**System.out.println("You are not eligible to vote :"+age);**

**}**

**}**

**}**

**14. Write a Java program to check whether a character is a vowel or consonant using a switch statement.**

**public class Vowels**

**{**

**public static void main(String[] args)**

**{**

**char ch = 'i';**

**switch (ch)**

**{**

**case 'a': System.out.println("a is vowel :"+ch);**

**break;**

**case 'e': System.out.println("e is vowel :"+ch);**

**break;**

**case 'i': System.out.println("i is vowel :"+ch);**

**break;**

**case 'o': System.out.println("o is vowel :"+ch);**

**break;**

**case 'u': System.out.println("u is vowel :"+ch);**

**break;**

**default: System.out.println("It is an constant :"+ch);**

**}**

**}**

**}**

**15. Write a Java program that uses a switch statement to perform basic arithmetic operations (addition, subtraction, multiplication, division) based on user input.**

**import java.util.Scanner;**

**public class BasicArthimeticOperator**

**{**

**public static void main(String[] args)**

**{**

**//char operator;**

**int result;**

**Scanner sc = new Scanner(System.in);**

**System.out.println("Enter a number1");**

**int number1 = sc.nextInt();**

**System.out.println("Enter a number2");**

**int number2 = sc.nextInt();**

**System.out.println("Choose an operator: +,-,\*,/,%");**

**char operator = sc.next().charAt(0);**

**switch (operator)**

**{**

**case '+': result = number1 + number2;**

**System.out.println(number1 +"+" +number2+"="+result);**

**break;**

**case '-': result = number1 - number2;**

**System.out.println(number1 +"-" +number2+"="+result);**

**break;**

**case '\*': result = number1 \* number2;**

**System.out.println(number1 +"\*" +number2+ "="+result);**

**break;**

**case '/': result = number1 / number2;**

**System.out.println(number1 +"/" +number2+"="+result);**

**break;**

**case '%': result = number1 % number2;**

**System.out.println(number1 +"%" +number2+"="+result);**

**break;**

**default: System.out.println("Invalid operator");**

**break;**

**}**

**}**

**}**

**16. Write a Java program to find the grade of a student based on their marks using a switch statement.**

**import java.util.Scanner;**

**public class StudentGrade**

**{**

**public static void main(String[] args)**

**{**

**Scanner sc = new Scanner(System.in);**

**System.out.println("Enter a grade :");**

**String str = sc.next();**

**char grade = str.charAt(0);**

**switch(grade)**

**{**

**case 'O': System.out.println("Grade O marks >=90");**

**break;**

**case 'A': System.out.println("Grade A marks >=80");**

**break;**

**case 'B': System.out.println("Grade B marks >=70");**

**break;**

**case 'C': System.out.println("Grade C marks >=60");**

**break;**

**default: System.out.println("Grade D marks >=50");**

**}**

**}**

**}**

**17. Write a Java program to print the numbers from 1 to 10 using a for loop.**

**public class Numbers1To10**

**{**

**public static void main(String[] args)**

**{**

**for(int i=1;i<=10;i++)**

**{**

**System.out.println("Numbers from 1 to 10 :"+i);**

**}**

**}**

**}**

**18. Write a Java program to print all even numbers from 1 to 50 using a for loop.**

**public class Numbers1To10**

**{**

**public static void main(String[] args)**

**{**

**for(int i=1;i<=50;i++)**

**{**

**if(i%2==0)**

**{**

**System.out.println("Even numbers from 1 to 50:"+i);**

**}**

**}**

**}**

**}**

**19. Write a Java program to find the factorial of a number using a for loop.**

**public class Factorial**

**{**

**public static void main(String[] args)**

**{**

**int fact = 1;**

**int number = 5;**

**for(int i=1;i<=number;i++)**

**{**

**fact = fact\*i;**

**}**

**System.out.println("Factorial numbers are :"+fact);**

**}**

**}**

**20. Write a Java program to print the Fibonacci series up to a given number using a for loop.**

**public class Fibonaaci**

**{**

**public static void main(String[] args)**

**{**

**int a=0,b=1,n3,c=10;**

**System.out.print(a+" "+b);**

**for(int i=2;i<c;++i)**

**{**

**n3=a+b;**

**System.out.print(" "+n3);**

**a=b;**

**b=n3;**

**}**

**}**

**}**

**21. Write a Java program to reverse a given number using a while loop.**

**public class ReverseNumber**

**{**

**public static void main(String[] args)**

**{**

**int number = 7628;**

**int reverse=0;**

**while(number!=0)**

**{**

**int remainder = number % 10;**

**reverse = reverse\*10+remainder;**

**number = number/10;**

**}**

**System.out.println("Reverse number is :"+reverse);**

**}**

**}**

**22. Write a Java program to find the sum of digits of a given number using a while loop.**

**public class SumOfDigits**

**{**

**public static void main(String[] args)**

**{**

**int sum = 0;**

**int number = 728;**

**while(number!=0)**

**{**

**int remainder = number%10;**

**sum = sum+remainder;**

**number = number/10;**

**}**

**System.out.println("Sum of the number is :"+sum);**

**}**

**}**

**23. Write a Java program to check if a number is a palindrome or not using a while loop.**

**public class PalinNumber**

**{**

**public static void main(String[] args)**

**{**

**int number = 44;**

**int r, sum = 0, temp;**

**temp = number;**

**while(number>0)**

**{**

**r = number % 10;**

**sum = sum\*10+r;**

**number = number/10;**

**}**

**if(temp==sum)**

**{**

**System.out.println("Given number is Palindrome");**

**}**

**else**

**{**

**System.out.println("Given number is not Palindrome");**

**}**

**}**

**}**

**24. Write a Java program to print the multiplication table of a given number using a do-while loop.**

**import java.util.Scanner;**

**public class Mul**

**{**

**public static void main(String[] args)**

**{**

**Scanner sc = new Scanner(System.in);**

**System.out.println("Enter the number");**

**int number = sc.nextInt();**

**int i=1;**

**do**

**{**

**System.out.println("Multiplication of a given number is :");**

**System.out.println(number+"\*"+i+"="+number\*i);**

**i++;**

**}**

**while(i<=10);**

**}**

**}**

**25. Write a Java program to calculate the sum of the first 10 natural numbers using a while loop.**

**public class Sum10Natuarl**

**{**

**public static void main(String[] args)**

**{**

**int number = 10;**

**int sum = 0;**

**int i=1;**

**while(i<=number)**

**{**

**sum = sum+i;**

**i++;**

**}**

**System.out.println("Sum of first 10 natural numbers is :"+sum);**

**}**

**}**

**26. Write a Java program to find the GCD (Greatest Common Divisor) of two numbers using a while loop.**

**27. Write a Java program to calculate the power of a number using a for loop.**

**import java.util.Scanner;**

**public class PowerNumber**

**{**

**public static void main(String[] args)**

**{**

**Scanner sc = new Scanner(System.in);**

**System.out.println("Enter the base number :");**

**int base = sc.nextInt();**

**System.out.println("Enter the exponent :");**

**int exponent = sc.nextInt();**

**System.out.println("Enter the result :");**

**int result = sc.nextInt();**

**for (int i = 0; i < exponent; i++)**

**{**

**result \*= base;**

**}**

**System.out.println(base + " raised to the power of " + exponent + " is " + result);**

**}**

**}**

**28. Write a Java program to print all prime numbers between 1 and 100 using a for loop.**

**public class PrimeNumber**

**{**

**public static void main(String[] args)**

**{**

**int count=0;**

**for(int i=2;i<=100;i++)**

**{**

**for(int j=i;j>=1;j--)**

**{**

**if(i%j==0)**

**{**

**count = count+1;**

**}**

**}**

**}**

**if(count==2)**

**{**

**System.out.println("Prime numbers from 1 to 100 :");**

**}**

**}**

**}**

**29. Write a Java program to find the sum of an array of integers using a for loop.**

**public class SumOfArray**

**{**

**public static void main(String[] args)**

**{**

**int sum = 0;**

**int arr[] = {7,6,28};**

**for(int i=0;i<arr.length;i++)**

**{**

**sum = sum+arr[i];**

**}**

**System.out.println("Sum of the array is :"+sum);**

**}**

**}**

**30. Write a Java program to find the largest element in an array using a for loop.**

**public class LargestNumber**

**{**

**public static void main(String[] args)**

**{**

**int arr[] = {7,6,28,24};**

**int largest = arr[0];**

**for(int i=0;i<arr.length;i++)**

**{**

**if(arr[i]>largest)**

**{**

**largest = arr[i];**

**}**

**}**

**System.out.println("largest element of array is :"+largest);**

**}**

**}**