D.S. COLLEGE

ALIGARH

BCA 4th SEMESTER

Assignment Work

of

Java Programming

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Literals:-

In programming literal is a notation that represents a fixed value(constant value) in the source code.
It can be categorized as an Integer literal, String literal etc. It is defined by the programmer. Once it has been defined cannot be changed.
In short "A constant value which can be assigned to a variable is called as a literal".
Java provides five type of literals are as follows :-

- Integer
- Floating point
- Character
- String
- Boolean

1) Integer :- For Integer data types (byte, short, int, long), we can specify literals in 4 ways:-

(a) Decimal literals (Base 10): In this form, the allowed digits are 0-9.

```
Ex- int x = 101;
```

(b) Octal literals (Base 8): In this form, the allowed digits are 0-7.

```
// The octal number should be prefix with 0.
Ex- int x = 0146;
```

(c) Hexa-decimal literals (Base 16): In this form, the allowed digits are 0-9, and characters are a-f. We can use both uppercase and lowercase characters as we know that java is a case-sensitive programming language, but here java is not case-sensitive.

```
// The hexa-decimal number should be prefix

// with 0X or 0x.

Ex- int x = 0X123Face;
```

(d) Binary literals: From 1.7 onward, we can specify literal value even in binary form also, allowed digits are 0 and 1. Literals value should be prefixed with 0b or 0B.

```
Ex- int x = 0b1111;
```

(2) Floating-point literals :- For floating-point data types, we can specify literals in only decimal form, and we can't specify in octal and Hexadecimal forms.

Decimal literals(Base10) :- In this form, the allowed digits are 0-9.

Ex- float f = 1.531235f;

Double d = 15.65;

(3) Character :- For char data types, we can specify literals in 4 ways:-

(a) Single quote: We can specify literal to a char data type as a single character within the single quote.

char ch = 'a';

(b) Char literal as Integral literal: we can specify char literal as integral literal, which represents the Unicode value of the character, and that integral literal can be specified either in Decimal, Octal, and Hexadecimal forms. But the allowed range is 0 to 65535.

```
char ch = 062;
```

(c) Unicode Representation: We can specify char literals in Unicode representation '\uxxxx'. Here xxxx represents 4 hexadecimal numbers.

```
char ch = '\u0061';// Here /u0061 represent a.
```

(d) Escape Sequence: Every escape character can be specified as char literals.

```
char ch = '\n';
```

(4) String literals :- Any sequence of characters within double quotes is treated as String literals.

```
String s = "Hello"
```

(5) Boolean literals :- Only two values are allowed for Boolean literals, i.e., true and false.

```
boolean b1 = true;

Boolean b2 = false;
```

Literal name	Type
23	Int
9.86	Double
True, false	Boolean
‘k’,’7’,’-‘	Char
“Ajay”	String

MCQs on Literals :-

1) What is Literal in Java?

A) Literal is the value that is given or assigned to a variable.
B) Literal is a data type
C) Literal is similar to String
D) None of the above
Answer (A)
Explanation:
Examples: 123, 45.67f, 'C', "abc", false

2) What are the types of Literals available in Java language?

A) Integer and Float
B) Character and String
C) Boolean
D) All the above
Answer (D)
Explanation:
Literals are Data assigned to Primitive data type variables.

3) What are the types of Integer Literals in Java?

A) Decimal Literals
B) Octal and Hexadecimal Literals
C) Binary Literals
D) All the above
Answer (D)
Explanation:
JDK 7 introduced binary literals to easily set individual bits of a number.

4) Choose correct examples of decimal literals in Java.

A) int a = 12345;
B) int a = 12_3__5;
C) long a = 987____654_3__21L;
D) All the above
Answer (D)
Explanation:
To represent big numbers, simply append letter 'l' or 'L' to the number to make it a long integer. This avoids compiler errors saying "out of range"

5) An Octal number is Java is represented with a leading ____?

A) O (Alphabet)
B) 0 (ZERO)
C) 0x
D) 0X
Answer (B)
Explanation:
Exp:- int a=0765;

6) Choose correct ranges for Decimal, Octal and Hexadecimal numbers in Java?

A) Decimal: 0 to 9
B) Octal: 0 to 7
C) Hexadecimal: 0 to 9 and A to F / a to f
D) All the above
Answer (D)

7) Choose the correct example of Octal Literal in Java?

A) short = 0564;
B) int = 076__45_2;
C) int = 0_____11;
D) All the above
Answer (D)
Explanation:
int = 0_____11; // 8^1 * 1 + 8^0 * 1 = 9

8) What is the prefix used to represent Hexadecimal numbers in Java?

A) 0x
B) 0X
C) A and B
D) None of the above
Answer (C)
Explanation:
int a=0xFEB5;
int b=0X9876__45;

9) Choose correct examples of Hexadecimal literals in Java?

A) long a = 0X987654321L;
B) int a = 0x76FE____23;
C) byte b = 0X0__________F;
D) All the above
Answer (D)

10) Binary literals in Java are introduced with which version of Java?

A) JDK 5
B) JDK 6
C) JDK 7
D) JDK 8
Answer (C)

11) Underscore symbols in literal numbers are introduced with which version of Java?

A) JDK 5
B) JDK 6
C) JDK 7
D) JDK 8
Answer (C)
Explanation :- Underscore symbol is introduced in java in JDK 7.

12) What is the prefix used to represent Binary literals in Java?

A) b or B
B) 0b or 0B
C) xB or xb
D) od or oD
Answer (B)
Explanation:
ZERO B or ZERO b
byte a = 0b00001111; //15 in decimal

13) What is the correct representation of using Binary literals in Java?

A) int a = 0b1010;
B) int a = 0B1011_1010;
C) int a = 0B0_____1;
D) All the above
Answer (D)
Explanation:
int a = 0B0_____1; //decimal=1
int b = 0b1010; //decimal=10

14) What is the compiler error for improperly using Underscores (_) in literals in Java?

A) Underscores are out of range
B) Illegal Underscores Exception
C) Underscores have to be located within digits
D) Too many Underscores
Answer (C)
Explanation:
Underscore symbols cannot be used at the beginning and the end of digits of a number.

15) Choose a correct rule for using Underscores in literals of Java language.

A) Underscores cannot come at the end of a number or next to the last digit of a number.
B) Underscores cannot come at the beginning of a number or before the first digit of a number.

C) Underscores cannot come before or after a decimal point in real numbers like float and double.
D) All the above
Answer (D)
Explanation:
Also, there is no limit on the number of underscores between digits.

16) What is the maximum number of Underscore characters that can be used in between the digits of a numeric literal in Java?

A) 8
B) 16
C) 32
D) No Limit
Answer (D)
Explanation:
Theoretically, there is no limit on the number of underscores.

17) Java uses UTF-16 Unicode format to represent characters. What is UTF?

A) Universal Transcript Format
B) Universal Transformation Format
C) Universal Technology Format
D) None of the above
Answer (B)
Explanation:
Unicode contains 65535 characters.

18) What is the name given to character literals in Java that start with a Back Slash character?

A) Back Slash Sequence
B) Slash Sequence
C) Escape Sequence
D) Extended Sequence
Answer (C)
Explanation:
\b = backspace

\n = new line
\\ = backslash

19) What is the literal in Java that can be used to test whether an Object of any type is alive or not?

A) alive
B) liveof
C) null
D) 0
Answer (C)
Explanation:
String a;
if(a==null)
System.out.println("Object destroyed");

20) What is the common UTF standard used on the Websites for information exchange?

A) UTF 16
B) UTF 8
C) UTF 32
D) None of the above
Answer (B)
Explanation:
UTF 16 character encoding standard used by Java language is used only by the Windows internal system and JavaScript Library. Unix, Linux and MacOS use UTF-8 encoding standard. UTF-8 encoding standard uses by websites for information exchange.

21) What is the suffix used to represent a floating point number in Java?

A) r or R

B) f or F

C) fl or FL

D) None of the above

Answer (B)
Explanation:
float a = 1.345f;
float b = 567.345678F;

22) What is the precision after decimal points offered by a float data type in Java?

A) 3 digits

B) 6 digits

C) 10 digits

D) 15 digits

Answer (B)
Explanation:
float interest = 24.123456f;

23) A real number literal for floating point literal with a missing f or F suffix represents which data type?

A) double

B) float

C) long

D) int

Answer (A)
Explanation:
float a = 1.23; //error
//can not convert from double to float
float b = 1.23F // works
double c = 1.567; //works

24) What is the suffix used to convert an int literal to long literal in Java?

A) 0l or 0L

B) l or L

C) i or I

D) 0x or 0X

Answer (B)
Explanation:
int a = 987654; //works
int b = 9876543210; //Out of range error
long c = 9876543210;//Out of range error
long d = 9876543210L; //works

25) A character literal in Java is enclosed within a pair of ___?

A) Square brackets

B) Double Quotes

C) Single Quotes

D) Exclamations

Answer (C)
Explanation:
char ch='A';
char ch2 = 'b';

26) Which version of Java started offering unsigned int and unsigned long to represent very long numbers?

A) JDK 5

B) JDK 6

C) JDK 7

D) JDK 8

Answer (D)
Explanation:
You have to use Object version of int and long namely Integer and Long to avail the feature. Using primitive data types, you can not create an unsigned int or unsigned long.

27) Choose a correct statement about Java literal types.

A) Decimal literal uses Base 10 number system.
B) Binary literal uses Base 2 number system.
C) Octal literal uses Base 8 number system.
D) All the above
Answer (D)
Explanation:
Hexadecimal literal uses Base 16 number system.

28) A String literal in Java is surrounded by a pair of _____?

A) Braces
B) Single Quotes
C) Double Quotes
D) Exclamations
Answer (C)
Explanation:
String name = "JAVA HERO";

29) Which among the following is not a primitive data type in Java?

A) char
B) String
C) byte
D) short
Answer (B)
Explanation:
A string is a Class that can handle a string of characters or a group of characters. If the name of the type starts with an Uppercase letter, it is a Class. So it is non-primitive.

30) Which version of Java introduced Hexadecimal floating point numbers?

A) JDK 5
B) JDK 6
C) JDK 7

D) JDK 8
Answer (C)
Explanation:
float a = 0x3.1p0f; // 3.0625
//3 x p0 = 3 x 2^0 = 3
//(0.1)/16 = 0.0625

31) What are the two floating point notations in Java language?

A) Exponential e or E (10^a)
B) Exponential p or P (2^a)
C) A and B
D) None of the above
Answer (C)

32) Choose the correct implementation of floating point literals in the exponential form in Java.

A) float a = 12.0e2f; //1200.0
B) float a = 100.0e-2f; // 1.0
C) float a = 123.456e-21f;
//1.23456E-19
D) All the above
Answer (D)

33) Choose the correct usage of boolean literal in the options below.

A) boolean b= false;
B) boolean b= 2<4; //2<4 is true;
C) if(true) { System.out.println("HELLO"); }
D) All the above
Answer (D)

34) What is the output of this Java snippet?

```
int a = 0b111;
System.out.println(a);
```

A) 111
B) 7
C) 8
D) Compiler error
Answer (B)
Explanation:
1x2^2 + 1x2^1 + 1x2^0
1x4 + 1x2 + 1
4 + 2 + 1

35) Choose the wrong Java code statement below.

A) boolean a = false;
B) boolean a = (5>6)||(4>3);
C) boolean a = 1;
D) boolean a = 4>3?true:false;
Answer (C)
Explanation:
You can not assign an integer value to a boolean data type. Java does not convert integers to boolean true or false.

36) Choose the wrong Java code statement below.

A) char a ='a';
B) char a ="ab";
C) char a =97;
D) char a ='\u0123';
Answer (B)
Explanation:
A character variable can hold only one letter that can be represented by UTF-16 Unicode internally. Use only single quotes.
String str = "ab"; //works

37) Choose the wrong representation of a character literal in Octal notation in Java.

A) char ch='\65';
B) char ch='\142';

C) char ch='\065';
D) char ch='142';
Answer (D)
Explanation:
char ch='\142'; //works
char ch2 = '\97';//9 is not Octal digit

38) A Unicode character literal in Java is surrounded by a pair of ___?

literal = \ua123

A) Single Quotes
B) Double Quotes
C) Exclamations
D) Backslashes
Answer (A)
Explanation:
char ch='\ua123';

39) What is the default boolean literal assigned to a boolean variable in Java?

A) true
B) false
C) undefined
D) None of the above
Answer (B)
Explanation:
Default values are assigned only to the instance variables.

40) What is the default character literal value assigned to a char variable in Java?

A) 'a'
B) '0'
C) '\u0000'
D) 0
Answer (C)

41) Integer literal containing value "F" comes under _____ system.

A) None of these
B) Hexa Decimal Number
C) Octal Number
D) Binary number

Answer (B)

42) _____ literal is used to Create a Values of the integral types byte, short, int, and long.

A) Integer
B) Byte
C) Long
D) Double

Answer (A)

43) An integer literal is of type long if and only if it has suffix - _____ in Java Programming.

A O
B F
C D
D L

Answer (D)

44) Which of these can be returned by the operator &?

A) Integer
B) Boolean
C) Character
D) Integer or Boolean

Answer (D)

Explanation: We can use binary ampersand operator on integers/chars (and it returns an integer) or on booleans (and it returns a boolean).

45) Which of these is an incorrect string literal?

a) “Hello World”
b) “Hello\nWorld”
c) “\”Hello World\””
d)"Hello

world"

Answer (d)

Explanation: All string literals must begin and end in the same line.

46) What will be the output of the following Java program?

```
1.    class dynamic_initialization
2.    {
3.        public static void main(String args[])
4.        {
5.            double a, b;
6.            a = 3.0;
7.            b = 4.0;
8.     double c = Math.sqrt(a * a + b * b);
9.     System.out.println(c);
10.        }
11.    }
```

a) 5.0

b) 25.0

c) 7.0

d) Compilation Error

Answer (a)

Explanation: Variable c has been dynamically initialized to square root of a * a + b * b, during run time.

output:

```
$ javac dynamic_initialization.java
$ java dynamic_initialization
5.0
```

47) what is the name given to a character literals in java that starts with a Back slash character ?

A) Back slash Sequence

B) Slash Sequence

C) Escape Sequence

D) Extended Sequence

Answer (C)

Explanation :- /b = backspace , /n = new line etc.

48) What is the precision after decimal points offered by a float data type in java ?

A) 3 digits
B) 6 digits
C) 10 digits
D) 15 digits

Answer (B)
Explanation:- float interest = 24.123456f;

49) A real number literal for floating point literal with a missing f or F suffix represents which data type ?

A) double
B) float
C) long
D) int

Answer (A)
Explanation:-
float a = 1.23; //error
//can not convert from float to double
float b = 1.23f // works
double = 1.567; // works

50) Which version of java started offering unsigned int and unsigned long to represent very long numbers ?

A) JDK 5
B) JDK 6
C) JDK 7
D) JDK 8

Answer (D)
Explanation:- You have to use of int and long namely integer and long to avail the feature. Using Primitive data types, you can not create an un-signed int or un-signed long.

Seprators :-

Separators in java are nothing but **some symbols** or **characters** that are used to structure a java program.
The separators in Java is also known as **punctuators**. There are Eight separators in Java, are as follows:

Separators <= ; | , | . | (|) | { | } | [|]

NOTE:- Note that the first three separators (; , and .) are tokens that separate other tokens, and the last six (3 pairs of braces) separators are also known as delimiters. For example, Math.pow(9, 3); contains nine tokens

- **Square Brackets []:** It is used to define array elements. A pair of square brackets represents the single-dimensional array, two pairs of square brackets represent the two-dimensional array.
- **Parentheses ():** It is used to call the functions and parsing the parameters.
- **Curly Braces {}:** The curly braces denote the starting and ending of a code block.
- **Comma (,):** It is used to separate two values, statements, and parameters.
- **Semicolon (;):** It is the symbol that can be found at end of the statements. It separates the two statements.
- **Period (.):** It separates the package name form the sub-packages and class. It also separates a variable or method from a reference variable.

MCQs on Separators in java :-

1. Which separator is used to separate items in a list, such as method arguments or variable declarations?

A) Semicolon (;)
B) Comma (,)
C) Colon (:)
D) Period (.)
Answer: B) Comma (,)

2. Which separator is used to separate statements in Java?

A) Semicolon (;)
B) Comma (,)
C) Colon (:)
D) Period (.)
Answer: A) Semicolon (;)

3. Which separator is used to access fields and methods in a class or interface?

A) Semicolon (;)
B) Comma (,)
C) Colon (:)
D) Period (.)
Answer: D) Period (.)

4. Which separator is used to enclose method arguments?

A) Braces ({ and })
B) Parentheses ((and))
C) Square brackets ([and])
D) Ellipsis (...)
Answer: B) Parentheses ((and))

5. Which separator is used to group statements and define code blocks?

A) Braces ({ and })
B) Parentheses ((and))
C) Square brackets ([and])
D) Ellipsis (...)
Answer: A) Braces ({ and })

6. Which separator is used in the enhanced for loop to separate the loop variable from the collection?

A) Semicolon (;)
B) Comma (,)
C) Colon (:)
D) Period (.)
Answer: C) Colon (:)

7. Which separator is used to define order of evaluation in expressions?

A) Semicolon (;)
B) Comma (,)
C) Parentheses ((and))
D) Ellipsis (...)
Answer: C) Parentheses ((and))

8. Which separator is used to define arrays and access individual array elements?

A) Semicolon (;)
B) Comma (,)
C) Square brackets ([and])
D) Ellipsis (...)
Answer: C) Square brackets ([and])

9. Which separator is used in variable-length argument lists to indicate that any number of arguments can be passed to a method?

A) Semicolon (;)
B) Comma (,)
C) Parentheses ((and))
D) Ellipsis (...)
Answer: D) Ellipsis (...)

10. Which separator is used to separate key-value pairs in a map?

A) Semicolon (;)
B) Comma (,)
C) Colon (:)
D) Period (.)

Answer: C) Colon (:)

11. Which separator is used to define a package hierarchy in Java?

A) Semicolon (;)
B) Comma (,)
C) Period (.)
D) Braces ({ and })
Answer: C) Period (.)

12. Which separator is used in switch statements to separate the case label from the statements?

A) Semicolon (;)
B) Comma (,)
C) Colon (:)
D) Period (.)
Answer: Colon (:)

13. Which separator is used to indicate inheritance in Java class declarations?

A) Semicolon (;)
B) Comma (,)
C) Colon (:)
D) Period (.)
Answer: C) Colon (:)

14. Which separator is used to specify the scope of a variable in Java?

A) Semicolon (;)
B) Comma (,)
C) Colon (:)
D) Period (.)
Answer: A) Semicolon (;)

15. Which separator is used to separate elements in an array initializer?

A) Semicolon (;)
B) Comma (,)
C) Colon (:)
D) Period (.)
Answer: B) Comma (,)

16. Which separator is used to access a method in a chain of method calls in Java?

A) Semicolon (;)
B) Comma (,)
C) Colon (:)
D) Period (.)
Answer: D) Period (.)

17) Which separator is used to separate type parameters in Java generic types?

A) Semicolon (;)
B) Comma (,)
C) Colon (:)
D) Angle brackets (< and >)
Answer: B) Comma (,)

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