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CHAPTER: 2

VARIABLES AND OPERATORS

NOTES:-

Q1: What is the syntax of java?
Syntax of java include

- ☯ White space
- ☯ Identifier
- ☯ Comment
- ☯ Literals
- ☯ Keyword
- ☯ Operator

Q2: Define and explain identifier?

In programming languages, identifiers are used for identification purpose. In Java an identifier can be a class name, method name, variable name or a label.
Identifier must follow some rules. Here are the rules:

- All identifiers must start with either a letter (a to z or A to Z) or currency character ($) or an underscore.
- After the first character, an identifier can have any combination of characters.
- A Java keyword cannot be used as an identifier.
- Identifiers in Java are case sensitive, foo and Foo are two different identifiers.

 In the HelloWorld program, HelloWorld, String, args, main and println are identifiers.

Q3: What are comments?

In java comments are statements that are not executed by the compiler and interpreter. The comments can be used to provide information or explanation about the variable, method, class or any statement. It can also be used to hide program code for specific time. There are three types of comments

Single line comment

Multi-line comment

Documentation

Q4: Define literals?

Java Literals are syntactic representations of Boolean, character, numeric, or string data. Literals provide a means of expressing specific values in your program.

Example: // here 100 is a constant literal

Int x= 100;

Q5: Define keyword?

Keyword is a special purpose word in a programming language that has a predefined meaning. Programmers cannot use keywords as names for variables, methods, classes, or as any other identifier. Abstract, class, Etc. are keywords

Q6: Define operator and it's types?

Operators are special symbols that perform specific operations on one, two, or three operands, and then return a result.

Types of operators:

- Arithmetic operator
- Shift operator
- Relational operator
- Bitwise operator
- Logical operator

- Unary operator
- Ternary operator
- Assignment operator

Q7: Define arithmetic operator?

Arithmetic operators are used in mathematical expressions in the same way that they are used in algebra

Operator	Use	Description
+	op1 + op2	Adds op1 and op2; also used to concatenate strings
-	op1 - op2	Subtracts op2 from op1
*	op1 * op2	Multiplies op1 by op2
/	op1 / op2	Divides op1 by op2
%	op1 % op2	Computes the remainder of dividing op1 by op2

Q8: Define relational operator?

A relational operator compares two values and determines the relationship between them. Output of relation operator is always a Boolean value. They are often used in branches and loop control.

The relational operator are given below

Operator	Meaning
<	less than
<=	less than or equal to
>	greater than
>=	greater than or equal to
==	equal to
!=	not equal to

Q9: Define logical operator?

A logical operator (sometimes called a "Boolean operator") in Java programming is an operator that returns a Boolean result that's based on the Boolean result of one or two other expressions.

Logical operators

&	op1 & op2	Logical AND
|	op1 | op2	Logical OR
&&	op1 && op2	Short-circuit AND
||	op1 || op2	Short-circuit OR
!	! op	Logical NOT
^	op1 ^ op2	Logical XOR

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Q10: Define bitwise operator?

The operator which operates expression bit by bit is called bitwise operator.

Operator	Meaning
&	Bitwise AND
|	Bitwise OR
^	Bitwise Exclusive
<<	Shift left
>>	Shift right

Q11: Define increment operator?

Increment operator is represented by a double plus (++) sign. It is used to add 1 to the value of a variable.

Q12: Define decrement operator?

The decrement operator is represented by double minus (−−) . it is used to minus 1 from the value of a variable

Q13: What is prefix operator?

When the increment operator is written before the variable name it is known as prefix operator.it first add 1 to the value of variable and then the value of variable is used in the expression. E.g. ++a

Q14: What is postfix operator?

When an increment operator is written after the variable name, it is known as postfix operator. It first use the current value of the postfix variable in the expression and then add 1 to the value of the variable. E.g. a++

Q15: What is prefix decrement operator?

When the decrement operator is written before the variable name it is known as prefix decrement operator.it first subtract 1 from the value of variable and then the value of variable is used in the expression. E.g. $--a$

Q16: Define postfix decrement operator?

When the decrement operator is written after the variable name it is known as postfix decrement operator. It first use the current value of the postfix variable in the expression and then subtract 1 from the value of the variable. E.g. $a-$

Q17: Define assignment operator?

Operator which is to assign a value to the variable is called assignment operator. It is a binary operator.

Syntax: variable = exp

Q18: Define unary operator?

The operator that need only one data item to operate on are called unary operator

Q19: What is ternary operator?

Ternary operator is shorthand for if else statement.

Syntax = expression ? exp 1 : exp 2 ;

Example = int febdays = 29;

String result;

result= if(febdays = = 29) ? "leap year" : "not leap year" ;

System.out.println(result);

Q20: Define shift operator?

These operators are used to shift values to left or right.

E.g. left shift = multiply <<

Right shift = division >>

Q21: What is modulus operator?

The modulus operator return the reminder of division operator.

Q22: State operator precedence?

Operator precedence determines the order in which the operators in an expression are evaluated

Java Operator Precedence	
Operators	**Precedence**
postfix increment and decrement	++ --
prefix increment and decrement, and unary	++ -- + - ~ !
multiplicative	* / %
additive	+ -
shift	<< >> >>>
relational	< > <= >= instanceof
equality	== !=
bitwise AND	&
bitwise exclusive OR	^
bitwise inclusive OR	|
logical AND	&&
logical OR	||
ternary	? :
assignment	= += -= *= /= %= &= ^= |= <<= >>= >>>=

Q23: Define variable?

A quantity whose value may change during execution of program is called variable. It may be numeric or a nun numeric value. It is represented by an identifier called variable name

Q24: Write variable naming rules?

- ➢ White space are not allowed in variable names.
- ➢ Must start with a letter, underscore (_) or dollar sign ($).
- ➢ After first letter you may use any letter number or symbol.
- ➢ Java is case sensitive (apple & APPLE are not same).
- ➢ Every new word in a variable name will start with capital letter.

Q25: What are types of variable?

There are three types of variable.

- • Local variable
- • Instance variable
- • Static variable

Q26: Define local variable?

Local variable are declared inside the method, constructor or blocks. Local variable has no default value. Local variable are created when the method, constructor or block is entered, and destroyed when its exist the constructor, method or block of code.

Q27: Define instance variable?

Instance variable are declared inside the class but outside the method, constructor or block

Instance variable are created with "new ()" and destroyed when object is destroyed. Instance variable has default value.

Q28: Define static variable?

A variable that is declares static is called static variable. This type of variable are initialized only once in a program.

Introduction to Java Programming Language

Example to Understand the Types of Variables in Java

```java
class A
{
    int data=50;  //instance variable
    static int m=100; //static variable
    void method()
    {
        int n=90; //local variable
    } //end of method
} //end of class
```

Q29: What is auto boxing?

Auto boxing is an automatic conversion from primitive data type to the corresponding wrapper classes.

Primitive   wrapper

Int   integer

Q30: Define unboxing:

Conversion of wrapper classes object into fundamental data type is called unboxing.

e.g.   integer i = new integer (55);

int a = i ;

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