

for Double Quotes etc.

Q. How many integer constants are allowed in Java? How are they written?

Ans: Java allows three types of integer constants: Octal (base 8), Decimal (base 10), and Hexadecimal (base 16). An Octal integer must be started with a zero '0', a Hexadecimal integer starts with a '0X', all others are treated as decimal integer constant.

Q. What is meant by a floating constant in Java? How many ways can a floating constant be represented into?

Ans: Floating constants are real numbers. A floating constant can either be a fractional or in exponent form.

Q. Differentiate between Integer and Floating type constants.

Ans: Integer constants are the whole numbers (without decimal points). e.g. 1231. Floating point constants are fractional numbers (number with decimal points). e.g. 14.2356

Q. Write the following real constants into fractional form: 0.113E04, 0.417E-04, 0.4E-05, 0.123E02

Ans: 0.113E04 becomes 1130, 0.417E-04 becomes .0000417, 0.4E-05 becomes .000004, 0.123E02 becomes 12.3

Q. What is a type or 'Data Type'? How this term is related to programming?

Ans: A type or datatype represents a set of possible values. When we specify that a variable has certain type, we are saying what values the expression can have. For example to say that a variable is of type int says that integer values in a certain range can be stored in that variable.

Q. What is primitive data type? Name its different types.

Ans: Primitive data types are those that are not composed of other data types. Numeric Integral, Fractional, character and boolean are different primitive data types.

Q. State the two kind on data types? [2006]

Ans: The two types of data types are: Primitive and non-primitive (composite/user define data types). The primitive data types are: byte, short, int, long, float, double, char and Boolean. The non-primitive/reference data types are: class, array and interface.

Q. Write down the names of three primitive and three non-primitive reference data types in Java/BlueJ.

Ans: The primitive data types are: byte, short, int, long, float, double, char and Boolean. The non-primitive/reference data types are: class, array and interface.

Q. How many bytes occupied by the following data types: byte, short, int, long, float, double, char, boolean.

Ans: char-2 byte, byte-1 byte, short-2 bytes, int-4 bytes, long-8 bytes, float-4 bytes, double-8 bytes, boolean-Java reserve 8 bits but only use 1 bit.

Q. What is the range of the following data types: byte, short, int, long, float, double, char, boolean.

**Ans: byte -> -128 to 127
short -> -32768 to 32767
int -> -2^{31} to $2^{31}-1$
long -> -2^{63} to $2^{63}-1$
float -> -3.4×10^{38} to 3.4×10^{38}
double -> -1.7×10^{308} to 1.7×10^{308}
char -> 0 to 65536
boolean -> true or false**

Q. What is the largest and smallest value for floating point primitive data types float?

Ans: The smallest value is -3.4E+38 and largest values is 3.4E+38 of floating point data type.

Q. What is Token? What are the tokens available in Java? [2008]

Ans: The smallest individual unit of a program is known as Token. The following Tokens are available in Java:- Keywords, Identifiers, Literals, Punctuations, Operators.

Q. What do you mean by variables? [2006]

Ans: A variable is a named memory location, which holds a data value of a particular data types. E.g. double p;

Function as a way to define operations/methods/messages. Pure functions return values and do not change state, impure functions may return values but also change state, return type argument to function, function prototype and function signature, overloading. Variable of a class type as reference to an objects, invocation of function on objects through the reference, the concept of this. Argument passing in functions, pass by value, what happened when a reference is passed side effect.

Q. What is Function? Why do we use functions while programs handling?

Ans: A named unit of a group of programs statements. This unit can be invoked from other parts of the program.

Q. Define Function prototype?

Ans: The function prototype is the first line of the function definition that tells the program about the type of the value returned by the function and the number and types of arguments.

Q. What is the use of void before function name? [2007]

Ans: void data type specifies an empty set of values and it is used as the return type for functions that do not return a value. Thus a function that does not return a value is declared as follows. void <functions name> (parameter list)

Q. Explain Functions/Methods Definitions with syntax?

Ans: A function must be defined before it is used anywhere in the program.

[access specifier][modifier]return-type function-name (parameter list)

{

body of the function

}

[access specifier] can be either Public, Protected or Private. [modifier] can be one of final, native, synchronize, transient, volatile. return-type specifies the type of value but the return statement of the function returns. It may be any valid Java data type. parameter list is comma separated list of variables of a function.

Q. Why main() function so special?

Ans: The main() function is invoked in the system by default, hence as soon as the command for execution of the program is used, control directly reaches the main() function.

Q. Explain the function prototype and the signature?

Ans: The function prototype is the first line of the function definitions, that tells the program about the type of the value returned by the function and the number and type of the arguments. Function signature basically refers to the number and types of the arguments, it is the part of the prototype.

Q. Explain the function of a return statement? [2006]

Ans: The return statement is useful in two ways. First an immediately exit from the function is caused as soon as a return statement is encountered and the control back to the main caller. Second use of return statement is that it is used a value to the calling code.

Q. Write advantages of using functions in programs

Ans: (i) functions lessen the complexity of programs (ii) functions hide the implementation details (iii) functions enhance reusability of code

Q. Difference between Actual argument and Formal argument? [2007,2008]

Ans: The parameter that appears in function call statement are called actual argument and The parameter that appears in function definition are called formal parameter.

Q. What are static members?

Ans: The members that are declared static is called static members. These members are associated with the class itself rather than individual objects, the static members and static methods are often referred to as class variables and methods.

Q. What is the use of static in main() methods? [2007]

Ans: (i) They can only call other static methods. (ii) They can only access static data. (iii) They can not refer to this or super in any way.

(d) Default (friendly) access: members with default (friendly) access can be used within the package where the class is defined.

Q. How are private member different from public member of a class.

Ans: Private members of a class are accessible in the member function of the class only, where as public members are accessible globally.

Q. How are protected members different from public and private members of a class.

Ans: Protected members of a class are accessible in all the classes in the same package and subclass in the other packages. private members of a class accessible in the member functions in the class only. Where as public members are accessible globally.

Q. Mention any **two** attributes required for class declaration. [2008]

Ans: The two attributes for class declaration are: 1. Access Specifier 2. Modifier 3. Class Name

Decision Making

[ICSE Syllabus on this Topic]

Application of if-then, if-then-else, switch (default, break).

Q. What is a statement?

Ans: Statements are the instructions given t the computer to perform any kind of action, as data movements, making decision or repeating action. Statements form the smallest executable unit and terminated with semi-colon.

Q. What are the three constructs that govern statement flow?

Ans: The three constructs that governs statement flow are: Sequence, Selection and Iteration constructs.

Q. What is a selection/conditional statement? Which selection statements does Java provides?

Ans: A selection statement is the one that is used to decide which statement should be execute next. This decision is based upon a test condition. The selection statements provided by Java are: if-else and switch. The conditional operator ?: can also be used to take simple decision.

Q. What is an 'if' statement? Explain with an example.

Ans: the 'if' statement helps in selecting one alternative out of the two. The execution of 'if' statement starts with the evaluation of condition. The 'if' statement therefore helps the programmer to test for the condition. General form of 'if' statement.

```
if(expression) statement
if(marks>=80)
    System.out.println("Grade A");
```

Q. What is the significance of a test-condition in a if statement?

Ans: It is the test condition of an if statement that decides whether the code associated with the if part or the one associated with the else part should be executed. The former is executed if the test condition evaluates to true and the latter works if the condition evaluates to false.

Q. Write one advantage and one disadvantage of using ?: in place of an if.

Ans: Advantage: It leads to a more compact program. Disadvantage: Nested ?: becomes difficult to understand or manage.

Q. What do you understand by nested 'if' statements?

OR

Q. Explain with an example the if-else-if construct. [2007]

Ans: A nested 'if' is an statement that has another 'if' in its body or in it's appearance. It takes the following general form.

```
if(ch>='A')
{
    if(ch<='Z')
        ++upcase;
    else
        ++other;
```

the block.

(v) Variable declared in interior blocks are not available outside of that block.

(vi) Variable declared in exterior blocks are visible to the interior blocks.

Q. Explain the different types of access specifier?

Ans: Access specifier can be of following types:

(a) **PUBLIC:** It means that any one can call this method.

(b) **PRIVATE:** It means that only the methods in the same class are permitted to use this method.

(c) **PROTECTED:** It means that methods in this class and methods in any subclass may access this method.

Q. What are member variables? State their types?

Ans: Member variables are also known as Instance variables. These member variables are used to store value in the class. It may be public, private and protected, where private and protected members remains hidden from outside world and there by support data.

Q. What is meant by private visibility of a method? [2006]

Ans: PRIVATE visibility of a Method means that only the methods in the same class are permitted to use this method.

Arrays

[ICSE Syllabus on this Topic]

Array and their usage, sorting algorithm - selection sort and bubble sort, search in sorted array. The class objects compatible with all the class.

Q. What do you understand by Arrays? How you declare an Array?

Ans: An Array is a collection of variables of the same data type that are referenced by a common name. Array can be declared by the following statements: `int n[]; new int[10];`

Q. What are the different types of arrays?

(i) **Single Dimensional Arrays:** A list of items can be given one variable name using only one subscript and such a variable is called a single subscripted variable or a one or single dimensional array.

(ii) **Multi Dimensional Arrays:** This type of arrays are actually arrays of arrays.

Q. Why we use Arrays? or What are the Advantages of using Arrays.

Ans: The Advantages or Arrays are: (i) Easy to Specify. (ii) Free from run-time overload. (iii) Random access of elements. (iv) Fast Sequential Access.

Q. How can arrays be initialized?

Ans: Array can be initialized at the time of declaration by providing the value list at the same time.

Q. What do you understand by out-of-bound subscripts?

Ans: The subscripts other than 0 to n-1 for an array having n elements are called out-of-bounds subscripts.

Q. What do you mean by Binary Search?

Ans: This search technique searches the given ITEM in minimum possible compression. The Binary search requires the array must be sorted in any order. The search ITEM is compared with middle element of the array. If the ITEM is more then the middle element later part of the arrays becomes the new array segment. The same process is repeated until either the ITEM is found or the array segment is reduce to single element.

Q. Differentiate between linear search and binary search techniques? [2007]

Ans: In linear search each elements of the array is compared with the given item to be searched for one by one while binary search searches for the given item in a sorted array. The search segment reduces to half at every successive stage.

Q. State the conditions under which Binary Search is applicable?

Ans: For Binary Search The List must be sorted, lower bound upper bound and the sort order of