**Set-3 (Data types)**

1. **In what format is Integer data stored in memory unit?**

base-2 format

1. **In what format is real number data stored in memory unit?**

IEEE format

1. **Which data types in Java are used to handle Integer data?**

byte, short, int and long

1. **In what format is still picture data stored in memory unit?**

.jpeg format and .gif format

1. **What are the different types of data in real world?**

Character type data, integer type data, real number type data, yes/no type data, still picture type data, audio and video type data

1. **In what format is video data stored in memory unit**

.mp4 format and .avi format

1. **What is the real number data by default treated in Java?**

Double

1. **What is the range of data that can be stored in long data type?**

-9223372036854775808L to +9223372036854775807L

**9. How many bytes are allocated for short data type in Java?**

1. Bytes

**10. Does Java follow ASCII or UNICODE ? Why?**

UNICODE. Because UNICODE would be having binary representations for all the symbols of all the languages which are currently used across the globe)

**11. How many bytes are allocated for long data type in Java?**

8 bytes

**12. How many bytes are allocated for float data type in Java?**

4 bytes

**13. What is the range of data that can be stored in byte data type?**

-128 to +127

**14. In what format is audio data stored in memory unit?**

.mp3 format

**15. What is the range of data that can be stored in short data type?**

-32768 to +32767

**16. How many bytes are allocated for char data type in Java? Why?**

2 bytes, because java follows UNICODE format

**17. Is zero a positive number or negative number in programming? Why?**

Zero is a positive number, because the most significant bit in the positive number is zero

**18. Who initiates the process of executing a program?**

OS

**19. Why does Java provide primitive data types in spite of the fact that it makes it only 99% OOP?**

Because creation of variables using primitive data types is faster than creating an object using wrapper classes)

**20. What is the range of double?**

-1.7e-308 to +1.7e+308

**21. Why does Java provide four data types to manage Integer type data?**

Because in real world integer data exists in varying magnitudes.

**22. Why does Java provide two data types to manage real number type data?**

For less precision and higher precision i.e. double type provides more accuracy than float type)

**23. Why should data be stored in form of 0s and 1s in the memory?**

Because every memory device can store only 0’s and 1’s

**24. How is audio type data handled in Java?**

Using in built classes

**25. How is video type data handled in Java?**

Using in built classes

**26. How is still picture type data handled in Java?**

Using in built classes

**27. How many bytes are allocated for boolean data type in Java?**

It is OS dependent or JVM dependent.

**28. What is the range of float?**

-3.4e-038 to +3.4e+038

**29. What are the different data types in Java?**

byte, short, int, long, float, double, boolean, char

**30. How is data stored in the memory unit?**

In the binary form

**31. Which data types in Java are used to handle real number data?**

float and double

**32. In what format is character data stored in memory unit?**

UTF-16 format or UTF-32 format

**33. In what format is yes/no data stored in memory unit?**

It is JVM dependent

**34. Why did UNICODE come into existence?**

Because ASCII does not have binary representation for all the symbols of all the languages which are currently used across the globe.

**35. What is the range of data that can be stored in int data type?**

-2147483648 to 2147483647

**36. How can you convert double data type to float data type in Java?**

i) By explicit typecasting

Eg. float a = (float) 24.17;

ii) By adding suffix ‘f’

Eg. float a = 24.17f;

**37. How many bytes are allocated for byte data type in Java?**

1 byte

**38. How many bytes are allocated for double data type in Java?**

8 bytes

**39. How many bytes are allocated for int data type in Java?**

4 bytes

**40. Which special characters may be used as the first character of an identifier?**

\_ and $

**41. Which characters may be used as the second character of an identifier, but not as the first character of an identifier?**

Digits cannot be used as the first character.

Eg. t6emp=25; and temp6=35; are valid whereas,

6temp=25; is invalid.

**42**. **How many bit format is ASCII exactly?**

7 bit format

**43. Why is ASCII format forcefully stored as 8-bit format?**

Because minimum memory that can be allocated is 1 Byte i.e. 8bits

**44. What is UTF?**

UTF stands for Universal Translational Format

**45. What is UTF-8?** **When is it used normally?**

UTF-8 is used whenever binary representations for only English and its associated symbols are required in the project.

**46. What is UTF-16? When is it used normally?**

UTF-16 is used whenever the binary representations for all the symbols of all the languages which are currently used across the world are required in the project.

**47. What is UTF-32? When is it used normally?**

UTF-32 is used whenever along with current languages symbols, even ancient languages symbols’ binary representations are required in the project.

**48. What is meant by rounding towards zero in integer division?**

Truncation, i.e. fractional portion is truncated and only the integer portion is retained.

Eg. (refer class notes)

**49. What is meant by truncation?**

Truncation is the process of eliminating the fractional part and retaining only the integer portion. It is also called as rounding towards zero.

**50. Are true and false keywords?**

true and false are reserved words.

**51. What is numeric promotion?**

When data of a smaller magnitude is placed within a memory location of a larger magnitude, it is called as numeric promotion. Implicit typecasting is also called as numeric promotion.

**52. What is the difference between the prefix and postfix forms of the ++ operator?**

Pre increment: increment first and then assign, post increment: first assign and then increment (Refer class notes for more examples)

**53. What are the rules associated with the usage of underscore in a literal?**

With respect to literal creation only one special character is permitted which is ‘\_’(underscore). It can only be used in between the literal any number of times and nowhere else i.e.

1. Underscore cannot be used before or after literal.

Eg.

int temp=9\_9;//valid

int temp=9\_\_\_\_9;//valid

int temp=\_99;//invalid

int temp=99\_;//invalid

1. It cannot be used before prefix or in between the prefix or soon after the prefix

Eg.

int temp=\_0x45; //invalid

int temp=0\_x45; //invalid

int temp=0x\_45; //invalid

int temp=0x4\_5; //valid

1. It cannot be used before or after suffix

Eg.

float temp=45.5f\_;//invalid

float temp=45.5\_f; //invalid

float temp=4\_5.5f; //valid

1. It cannot be used before or after decimal points

Eg.

float temp=45\_.5f;//invalid

float temp=45.\_5f;//invalid

float temp=4\_5.5f;//valid

**54. What is meant by “Java is a strongly typed language”?**

Every variable in java must have an associated data type and also a value which is compatible with the data type.

**55. Give the implicit upcasting chart or numeric promotion chart?**

(Refer class notes)

**56. Which Java operator is right to left associative?**

Assignment operator (=)

**57. Can a double value be cast to a byte?**

Yes.

**58. Express double a = 123.45 in scientific notation?**

double a = 1.2345E+2

**59. What is the difference between char literal and string literal?**

Character literal is data which is enclosed within single quotes whereas String literal is data which is enclosed within double quotes.

**60. Can we use underscore in a literal?**

Yes.

**61. What is the difference between declaring a variable and defining a variable?**

int a; // declaring,

int a=100; // defining

**62. Can we create binary literals in Java?**

Yes. Using a prefix 0b

**63. How do we make a project coded in Java a pure OOP project?**

Using wrapper classes.

**64. What is the role of wrapper classes in Java?**

Using wrapper classes, creation of primitive variables can be avoided and hence a pure object oriented project can be developed.

**65. What happens if a larger magnitude data is assigned to a value of a data type which cannot handle it?**

Overflow or loss of precision occurs.

**66. Should type casting be performed explicitly?**

Depends upon whether implicit or explicit typecasting is performed.

**67. Does type casting reduce the precision of the data?**

Depends upon whether implicit or explicit typecasting is performed. Implicit typecasting does not reduce precision whereas explicit typecasting reduces precision.

**68. Should numeric promotion be performed explicitly?**

No. Numeric promotion also known as implicit casting or java automatic conversions where conversion of a smaller numeric type to a larger numeric type takes place.

**69. Does numeric promotion reduce the precision of the data?**

No

**70. What is the role of formats in data types?**

It is used to convert real world data in its original form into 0s and 1s so that it can be stored in the memory unit.

**71. What is a variable?**

It is a reserved memory location into which a value can be stored

**72. What are the types of variables available in Java?**

Local variables, instance variables, reference variables and static variables.

**73. How is a negative number stored in Byte data type?**

Using 2’s compliment base-2 format.

**74. How is a negative number stored in short data type?**

Using 2’s compliment base-2 format.

**75. How is a negative number stored in int data type?**

Using 2’s compliment base-2 format.

**76. How is a negative number stored in long data type?**

Using 2’s compliment base-2 format.

**77. What is the range of char?**

0 to 65535

**78. What is a literal?**

Literal is a fixed value which is assigned to a variable.

**79. What does a prefix 0 indicate in a literal?**

It indicates that the number is an Octal.

**80. What does a prefix 0x indicate in a literal?**

It indicates that the number is Hexadecimal.

**81. How do we display a \ in Java?**

s.o.p( ‘\\’);

**82. How do we display “ in Java?**

s.o.p( ‘\”’);

**83. How do we display ‘ in Java?**

s.o.p( ‘\’’);

**84. Do we have unsigned integer format in Java?**

Not up to java 1.7. However, from java 1.8 it is supported.

**85. Can we use the float data type to hold the precise values such as currency?**

No. Rather, inbuilt class Currency is used.

**86. Can we use the double data type to hold the precise values such as currency?**

No. Rather, inbuilt class Currency is used.

**87. What is the default value of long?**

0L

**88. What is the default value of double?**

0.0

**89. What is the default value of char?**

‘\u0000’ i.e. blank character.

**90. How is a binary literal created in Java?**

Using the prefix 0b

**91. Identify valid and invalid literals?**

long creditCardNumber = 1234\_5678\_9012\_3456L;

long socialSecurityNumber = 999\_99\_9999L;

float pi = 3.14\_15F;

long hexBytes = 0xFF\_EC\_DE\_5E;

long hexWords = 0xCAFE\_BABE;

long maxLong = 0x7fff\_ffff\_ffff\_ffffL;

byte nybbles = 0b0010\_0101;

long bytes = 0b11010010\_01101001\_10010100\_10010010;

float pi1 = 3\_.1415F;

float pi2 = 3.\_1415F;

long socialSecurityNumber1 = 999\_99\_9999\_L;

int x1 = 5\_2;

int x2 = 52\_;

int x3 = 5\_\_\_\_\_\_\_2;

int x4 = 0\_x52;

int x5 = 0x\_52;

int x6 = 0x5\_2;

int x7 = 0x52\_;