Chapter-4

What is method?

A method is a group of statements that performs a specific task. Such as the Math.pow(a,b) is used to compute exponent operation, the **random()** method for generating a random number.

N.B. Math Class can be categorized as *trigonometric methods*, *exponent methods*, and *service methods*. The parameter for **sin**, **cos**, and **tan** is an angle in radians. One degree is

equal to p/180 in radians, 90 degrees is equal to p/2 in radians, and 30 degrees is equal to

p/6 in radians.

What are the rounding methods in Math Class?

The **Math** class contains five rounding methods.

ceil(x) x is rounded up to its nearest integer. This integer is returned as a double value.

floor(x) x is rounded down to its nearest integer. This integer is returned as a double value.

rint(x) x is rounded up to its nearest integer. If x is equally close to two integers, the even one is returned as a double value.

round(x) Returns (int)Math.floor(x + 0.5) if x is a float and returns (long)Math.floor(x + 0.5) if x is a double.

What are min, max and abs methods?

The **min** and **max** methods return the minimum and maximum numbers of two numbers (**int**,

**long**, **float**, or **double**). For example, **max(4.4, 5.0)** returns **5.0**, and **min(3, 2)**

returns **2**.

The **abs** method returns the absolute value of the number (**int**, **long**, **float**, or **double**).

Math.abs(**-2**) returns **2**

Math.abs(**-2.1**) returns

What is Character data type?

A character data type represents a single character. In addition to processing numeric values, we can process characters in Java. The character

data type, **char**, is used to represent a single character. A character literal is enclosed in single

quotation marks.

Example:

**char** letter = **'A'**;

**char** numChar = **'4'**;

Note:

A string literal must be enclosed in quotation marks (**" "**). A character literal is a single

character enclosed in single quotation marks (**' '**). Therefore, **"A"** is a string, but **'A'**

is a character.

What is encoding?

Computers use binary numbers internally. A character is stored in a computer as a sequence of 0s and 1s. Mapping a character to its binary representation is called *encoding*. Java supports *Unicode*. Unicode was originally designed as a 16-bit character encoding. Unicode allow up to 1,112,064 characters.

What is supplementary character?

Those characters

that go beyond the original 16-bit limit are called *supplementary characters*. Java supports the supplementary characters.

N.B. Most computers use *ASCII* (*American Standard Code for Information Interchange*), an

8-bit encoding scheme for representing all uppercase and lowercase letters, digits, punctuation

marks, and control characters. Unicode includes ASCII code

What is escape character?

Java uses a special notation to represent special characters, as

shown in Table 4.5. This special notation, called an *escape sequence*, consists of a backslash

(**\**) followed by a character or a combination of digits. For example, **\t** is an escape sequence

for the Tab character and an escape sequence such as **\u03b1** is used to represent a Unicode.

The symbols in an escape sequence are interpreted as a whole rather than individually. An

escape sequence is considered as a single character.

N.B All numeric operators can be applied to **char** operands. A **char** operand is automatically

cast into a number if the other operand is a number or a character. If the other operand

is a string, the character is concatenated with the string. For example, the following

statements

**int** i = **'2'** + **'3'**; // (int)'2' is 50 and (int)'3' is 51

System.out.println(**"i is "** + i); // i is 101