**PART 1 BASICS OF JAVA**

* Write a Java program to print 'Hello' on screen and then print your name on a separate line
* Write a Java program to print the sum, subtraction, multiplication and division of two numbers.
* Write a Java program to print the result of the following operations.   
  Test Data:  
  a. -5 + 8 \* 6  
  b. (55+9) % 9   
  c. 20 + -3\*5 / 8   
  d. 5 + 15 / 3 \* 2 - 8 % 3   
  Expected Output :  
  43   
  1   
  19   
  13
* Write a Java program to print the sum (addition), multiply, subtract, divide and remainder of two numbers.   
  Test Data:  
  Input first number: 125  
  Input second number: 24  
  Expected Output :  
  125 + 24 = 149  
  125 - 24 = 101  
  125 x 24 = 3000  
  125 / 24 = 5  
  125 mod 24 = 5
* Write a Java program to print the area and perimeter of a circle.   
  Test Data:  
  Radius = 7.5   
  Expected Output  
  Perimeter is = 47.12388980384689   
  Area is = 176.71458676442586
* Write a Java program and compute the sum of the digits of an integer.   
  Input Data:  
  Input an integer: 25  
  *Expected Output*

The sum of the digits is: 7

**PART 2**

* Write a Java program to convert temperature from Fahrenheit to Celsius degree   
  Test Data  
  Input a degree in Fahrenheit: 212  
  Expected Output :  
  212.0 degree Fahrenheit is equal to 100.0 in Celsius
* Write a Java program that reads an integer between 0 and 1000 and adds all the digits in the integer.

Test Data  
Input an integer between 0 and 1000: 565  
Expected Output :  
The sum of all digits in 565 is 16

* Write a Java program that prints the current time in GMT.

Test Data  
Input the time zone offset to GMT: 256  
Expected Output :  
Current time is 23:40:24

* Write a Java program to takes the user for a distance (in meters) and the time was taken (as three numbers: hours, minutes, seconds), and display the speed, in meters per second, kilometers per hour and miles per hour (hint: 1 mile = 1609 meters).

Test Data  
Input distance in meters: 2500   
Input hour: 5   
Input minutes: 56  
Input seconds: 23  
Expected Output :  
Your speed in meters/second is 0.11691531   
Your speed in km/h is 0.42089513   
Your speed in miles/h is 0.26158804

* What is the numeric value of each of the following expressions as evaluated by Java?

a. 4 + 6 \* 3

b. 6 / 3 \* 7

c. 18 / 2 + 14 / 2

d. 16 / 2

e. 17 / 2

f. 28 / 5

g. 16 % 2

h. 17 % 2

i. 28 % 5

j. 28 % 5 \* 3 + 1

k. (2 + 3) \* 4

l. 20 / (4 + 1)

* What is the value of each of the following Boolean expressions?

a. 4 > 1

b. 5 <= 18

c. 43 >= 43

d. 2 == 3

e. 2 + 5 == 7

f. 3 + 8 <= 10

g. 3 != 9

h. 13 != 13

i. –4 != 4

j. 2 + 5 \* 3 == 21

**PART 3 DECESION MAKING STRUCTURES**

* Assuming the variable q has been assigned the value 3, which of the following statements displays XXX?

a. if(q > 0) System.out.println("XXX");

b. if(q > 7); System.out.println("XXX");

c. Both of the above statements display XXX.

d. Neither of the above statements displays XXX.

* What is the output of the following code segment?

t = 10;

if(t > 7)

{

System.out.print("AAA");

System.out.print("BBB");

}

a. AAA

b. BBB

c. AAABBB

d. nothing

* What is the output of the following code segment?

t = 7;

if(t > 7)

System.out.print("AAA");

System.out.print("BBB");

a. AAA

b. BBB

c. AAABBB

d. nothing

* The operator that combines two conditions into a single Boolean value that is true

only when both of the conditions are true, but is false otherwise, is \_\_\_\_\_\_\_\_\_\_\_\_.

a. $$

b. !!

c. ||

d. &&

* The operator that combines two conditions into a single Boolean value that is true

when at least one of the conditions is true is \_\_\_\_\_\_\_\_\_\_\_\_.

a. $$

b. !!

c. ||

d. &&

* You can use the \_\_\_\_\_\_\_\_\_\_\_\_ statement to terminate a switch structure.

a. switch

b. end

c. case

d. break

* Assuming a variable w has been assigned the value 15, what does the following

statement do?

w == 15 ? x = 2 : x = 0;

a. assigns 15 to w

b. assigns 2 to x

c. assigns 0 to x

d. nothing

* Write a Java program to get a number from the user and print whether it is positive or negative.

Test Data  
Input number: 35  
Expected Output :  
Number is positive

* Write a Java program that takes the user to provide a single character from the alphabet. Print Vowel or Consonant, depending on the user input. If the user input is not a letter (between a and z or A and Z), or is a string of length > 1, print an error message.

Test Data  
Input an alphabet: p  
Expected Output :  
Input letter is Consonant

* A.Write an application that prompts the user for a checking account balance and a savings account balance. Display the message “Checking account balance is low” if the checking account balance is less than $10. Display the message “Savings account balance is low” if the savings account balance is less than $100. Save the file as Balance.java.

b. Modify the application in Exercise a to display an additional message, “Both accounts are dangerously low”, if both fall below the specified limits. Save the file as Balance2.java.

* A. Write an application for a college’s admissions office. Prompt the user for a student’s numeric high school grade point average (for example, 3.2) and an admission test score from 0 to 100. Display the message “Accept” if the student has any of the following:

u A grade point average of 3.0 or above and an admission test score of at least 60

u A grade point average below 3.0 and an admission test score of at least 80

If the student does not meet either of the qualification criteria, display “Reject”.

Save the file as Admission.java.

b. Modify the application in Exercise a so that if a user enters a grade point average under 0 or over 4.0, or a test score under 0 or over 100, an error message appears instead of the “Accept” or “Reject” message. Save the file as Admission2.java.

* Write an application that prompts the user for two integers and then prompts the user to enter an option as follows: 1 to add the two integers, 2 to subtract the second integer from the first, 3 to multiply the integers, and 4 to divide the first integer by the second. Display an error message if the user enters an option other than1 through 4 or if the user chooses the divide option but enters 0 for the second integer. Otherwise, display the results of the arithmetic. Save the file as Calculate.java.

**PART 4 USING METHODS, CLASSES, AND OBJECTS**

* All method declarations contain \_\_\_\_\_\_\_\_\_\_\_.

a. the keyword static

b. one or more explicitly named access specifiers

c. arguments

d. parentheses

* A public static method named computeSum() is located in classA. To call the

method from within classB, use the statement \_\_\_\_\_\_\_\_\_\_\_.

a. computeSum(classB);

b. classB(computeSum());

c. classA.computeSum();

d. You cannot call computeSum() from within classB.

* The method public static boolean testValue(int response) returns \_\_\_\_\_\_\_\_\_\_\_.

a. a boolean value

b. an int value

c. no value

d. You cannot determine what is returned

* Most class data fields are \_\_\_\_\_\_\_\_\_\_\_.

a. private

b. public

c. static

d. final

* If a class is named Student, the class constructor name is\_\_\_\_\_\_\_\_\_\_\_.

a. any legal Java identifier

b. any legal Java identifier that begins with S

c. StudentConstructor

d. Student

* Create an application named TestMethods whose main() method holds two integer variables. Assign values to the variables. In turn, pass each value to methods named displayIt(), displayItTimesTwo(), and displayItPlusOneHundred().Create each method to perform the task its name implies. Save the application as TestMethods.java.
* Create a class named Exponent. Its main() method accepts an integer value from a user at the keyboard, and in turn passes the value to a method that squares the number (multiplies it by itself) and to a method that cubes the number (multiplies it by itself twice). The main() method displays the results. Create the two methods that respectively square and cube an integer that is passed to them, returning the calculated value. Save the application as Exponent.java.

**PART 5 LOOPS**

* What is the output of the following code?

b = 1;

while(b < 4)

System.out.print(b + " ");

a. 1

b. 1 2 3

c. 1 2 3 4

d. 1 1 1 1 1 1…

What is the output of the following code?

b = 1;

while(b < 4)

{

System.out.print(b + " ");

b = b + 1;

}

a. 1

b. 1 2 3

c. 1 2 3 4

d. 1 1 1 1 1 1…

What does the following statement output?

for(a = 0; a < 5; ++a)

System.out.print(a + " ");

a. 0 0 0 0 0

b. 0 1 2 3 4

c. 0 1 2 3 4 5

d. Nothing

The loop that performs its conditional check at the bottom of the loop is a

\_\_\_\_\_\_\_\_\_\_\_ loop.

a. while

b. do…while

c. for

d. for…while

What does the following program segment output?

d = 0;

do

{

System.out.print(d + " ");

d++;

} while (d < 2);

a. 0

b. 0 1

c. 0 1 2

d. Nothing

What's wrong? for (int k = 2, k <= 12, k++)

[a] the increment should always be ++k

[b] the variable must always be the letter i when using a for loop

[c] there should be a semicolon at the end of the statement

[d] the commas should be semicolons

What value is stored in num at the end of this looping?

for (num = 1; num <= 5; num++)

[a] 1

[b] 4

[c] 5

[d] 6

What will be the output

public class ForLoop

{

    public static void main(String[] args)

    {

        for(int i=0;i>4?false:true;i++)

        {

            System.out.println("i="+i);

        }

    }

}

* Write an application that displays all even numbers from 2 to 100 inclusive, and that starts

a new line after every multiple of 20 (20, 40, 60, and 80). Save the file as EvenNums.java.

* Write an interactive program to print a diamond shape. For example, if user enters the number 3, the diamond will be as follows:

\*

\* \*

\* \* \*

\* \* \* \*

* Write a program in Java to make such a pattern like right angle triangle with a number which will repeat a number in a row.The pattern is as follows :

|  |  |  |
| --- | --- | --- |
| 1  22  333  4444 | 1  2 3  4 5 6  7 8 9 10 | 1  01  101  0101  10101 |

* Write an application that displays the results of a series of 10 coin tosses. Use the Math.random() function explained in Appendix D to generate a number between 0 and 1; you will use a statement similar to: After each coin toss, display whether the toss represents “heads” or “tails.” If the result is 0.5 or less, the result represents heads; otherwise, it represents tails. After the 10 tosses are complete, display the percentages of heads and tails. Run the application several times until you are confident that the coin tosses occur randomly. Save the file as FlipCoin.java.

**PART 6 ARRAYS AND ARRAYLIST**

* The following defines a \_\_\_\_\_\_\_\_\_\_\_\_\_ array:

int[][] nums = {{1, 2}, {3, 4}, {5, 6}};

a. one-dimensional

b. two-dimensional

c. three-dimensional

d. six-dimensional

* How many rows are contained in the following array?

double[][] prices = {{2.56, 3.57, 4.58, 5.59},

{12.35, 13.35, 14.35, 15.00}};

a. 1

b. 2

c. 4

d. 8

* In the following array, what is the value of code[2][1]?

char[][] code = {{ 'A ', 'D ', 'M '},

{ 'P ', 'R ', 'S '};

{ 'U ', 'V ', 'Z '}};

a. 'P'

b. 'R'

c. 'U'

d. 'V'

* In the following array, what is the value of address[1][1]?

String address = {{ "123 Oak ", "345 Elm "}; { "87 Maple ", "901 Linden "}};

a. "123 Oak "

b. "345 Elm "

c. "87 Maple "

d. "901 Linden "

* In the following array, what is the value of fees.length?

double[][] fees = {{3.00, 3.50, 4.00, 5.00}, {6.35, 7.35, 8.35, 9.00}};

a. 2

b. 4

c. 8

d. none of the above

* In the following array, what is the value of fees[1].length?

double[][] fees = {{3.00, 3.50, 4.00, 5.00}, {6.35, 7.35, 8.35, 9.00}};

a. 2

b. 4

c. 8

d. none of the above

* The chief advantage to using the ArrayList class instead of the Arrays class is that

an ArrayList \_\_\_\_\_.

a. can be much larger

b. is easier to search

c. is dynamically resizable

d. can be used as an argument to a static method

Write a Java program to find the maximum and minimum value of an array.

Write a Java program to add two matrices of the same size

1 . a . The median of a list is its middle value when the values are placed in order. For example, if a list contains 1, 4, 7, 8, and 9, then the median is 7. Write an application that allows you to enter nine double values and display them and their median. Save the file as Median.java.

b. Revise the Median class so that the user can enter any number of values up to nine. If the list has an even number of values, the median is the numeric average of the values in the two middle positions. Save the file as Median2.java.

2 a.Write an application containing an array of 15 double values. Include a method to sort and display the values in ascending order. Compile, run, and check the results. Save the file as SortDoubles.java.

b. Modify the SortDoubles application to prompt the user whether to view the list in ascending or descending order. Save the file as SortDoublesWithOption.java.

**PART 6 STRING**

* To create a String object, you can use the keyword \_\_\_\_\_\_\_\_\_\_\_ before the

constructor call, but you are not required to use this format.

a. object

b. create

c. char

d. new

* Suppose you declare two String objects as:

String word1 = new String("happy");

String word2;

When you ask a user to enter a value for word2, if the user types “happy”, the value of

word1 == word2 is \_\_\_\_\_\_\_\_\_\_\_.

a. true

b. false

c. illegal

d. unknown

* If you declare two String objects as:

String word1 = new String("happy");

String word2 = new String("happy");

the value of word1.equals(word2) is \_\_\_\_\_\_\_\_\_\_\_.

a. true

b. false

c. illegal

d. unknown

* The String class replace() method replaces \_\_\_\_\_\_\_\_\_\_\_.

a. a String with a character

b. one String with another String

c. one character in a String with another character

d. every occurrence of a character in a String with another character

* The toString() method converts a(n) \_\_\_\_\_\_\_\_\_\_\_ to a String.

a. char

b. int

c. float

d. all of the above

* The method that extracts a string from within another string is \_\_\_\_\_\_\_\_\_\_\_.

a. extract()

b. parseString()

c. substring()

d. append()

* The method parseInt() converts a(n) \_\_\_\_\_\_\_\_\_\_\_.

a. integer to a String

b. integer to a Double

c. Double to a String

d. String to an integer

* Write a Java program to get the character at the given index within the String.
* Write a java program to compare two strings
* Write an application that counts the total number of vowels contained in the String “Home is the place, when you have to go there, they have to take you in. Robert Frost”. Save the file as CountVowels.java.
* Write an application that demonstrates each of the following methods based on the following quote: “It is better to deserve honours and not have them than to have them and not deserve them.” – Mark Twain.

indexOf('h')

charAt(14)

endsWith("Twain")

replace('a', 'A')

* Create a class that holds three initialized StringBuilder objects: your first name, middle name, and last name. Create three new StringBuilder objects as follows:

An object named entireName that refers to your three names, separated by spaces

An object named lastFirst that refers to your last name, a comma, a space, and your first name, in that order

An object named signature that refers to your first name, a space, your middle initial (not the entire name), a period, a space, and your last name

Display all three objects. Save the file as Builder.java.