Introduction to Computer Programming (CSE1001)

Assignment-2

(Elementary Programming)

PART 1: Using Keyboard Input

Question No	Questions	Course Outcome

1.	Write a **Java Program** that reads a Celsius degree in a double value from the console, then converts it to Fahrenheit and displays the result.
	
	The **formula** for the conversion is as follows:
	
	`fahrenheit = (9 / 5) * celsius + 32`
	
	Hint: In Java, `9 / 5 is 1, but 9.0 / 5 is 1.8`
	
	Sample Run:
	`Enter a degree in Celsius: 43`
	`43 Celsius is 109.4 Fahrenheit`
		CO2

2.	Write a **Java Program** that reads the radius and length of a cylinder and computes the area and volume using the following formulas: [Use Math.PI]
	
	Formula:
	`Area = π * radius * radius`
	`Volume = Area * Length`
	
	Sample Run:
	`Enter the radius and length of a cylinder: 5.5 12`
	`The area is 95.03317777109123`
	`The volume is 1140.3981332530948`
		CO2

3.	Enter the basic salary of an employee of an organization through the keyboard. His dearness allowance (DA) is 40% of basic salary, and house rent allowance (HRA) is 20% of basic salary. Write a **Java Program** to calculate his gross salary. Print the DA, HRA and Gross salary.
	
	Sample Run:
	`Enter basic salary: 15600`
	`DA is 6240.0`
	`HRA is 3120.0`
	`Gross salary is 24960`
		CO2

4.	Write a **Java Program** that prompts the user to enter the side of a hexagon and displays its area.
	Formula:
	`Area of a hexagon is =` $\frac{3\sqrt{3}}{2}$ `(side)`^{2}
	
	Sample Run:
	`Enter the side: 5.5`
	`The area of the hexagon is 78.5895`
		CO2

5.	Write a **Java Program** that prompts the user to enter two points (x1, y1) and (x2, y2) and displays their distance between them.
	
	Formula:
	$\texttt{distance} = \sqrt{(x2 - x1)^2 + (y2 - y1)^2}$
	
	Note:
	Use Math.pow (a, 0.5) to compute $\sqrt{a}$
	
	Sample Run:
	`Enter x1 and y1: 1.5 -3.4`
	`Enter x2 and y2: 4 5`
	`The distance between the two points is 8.764131445842194`
		CO2

6.	Write a **Java Program** that prompts the user to enter three points (x1, y1), (x2, y2), (x3, y3) of a triangle and displays its area.
	
	Formula:
	`s = (side1 + side2 + side3)/2;`
	$\texttt{area} = \sqrt{s * (s - a) * (s - b) * (s - c)}$
	
	Sample Run:
	`Enter three points for a triangle:`
	`1.5 -3.4 4.6 5 9.5 -3.4`
	`The area of the triangle is 33.6`
		CO2

7.	Write a **Java Program** that displays the following table. Cast floating-point numbers into integers. **a** **b** **pow (a, b)** 1 2 1 2 3 8 3 4 81 4 5 1024 5 6 15625	
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8.	If you have N eggs, then you have N/12 dozen eggs, with N%12 eggs left over. (This is essentially the definition of the / and % operators for integers.)
	
	Write a **Java Program** that asks the user how many eggs she has and then tells the user how many dozen eggs she has and how many extra eggs are left over.
	
	A gross of eggs is equal to 144 eggs. Extend your program so that it will tell the user how many gross, how many dozen, and how many left over eggs she has.
	
	Sample Run:
	`Enter number of eggs: 1342`
	`Total number of eggs is 9 gross, 3 dozen, and 10.`
		CO2

9.	Write a **Java Program** that reads an integer between 0 and 1000 and adds all the digits in the integer. For **example**, if an integer is 932, the sum of all its digits is 14.	CO2

	Hint: Use the % operator to extract digits, and use the / operator to remove the extracted digit. For instance, 932 % 10 = 2 and 932 / 10 = 93.
	
	Sample Run:
	`Enter a number between 0 and 1000: 999`
	`The sum of the digits is 27`	

10.	The distance between two cities (in km.) is input through the keyboard. Write a **Java Program** to convert and print this distance in meters, feet, inches and centimetres.
	
	Hint: 1km=1000 meter, 1km=3280.8399 feet, 1km= 39370.0787 inch, 1km= 100000 centimetre
	
	Sample Run:
	`Enter the distance in km=165`
	`165 km is 165000 meters`
	`165 km is 541338.5835 feet`
	`165 km is 6496062.9854999995 inch`
	`165 km is 16500000 centimetres`
		CO2

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PART 2: Using Command-Line Arguments

Question No	Questions	Course Outcome

1.	Write a **Java Program** that takes two positive integers as **command-line arguments** and prints true if either evenly divides the other.
	
	Sample Runs:
	`Evenly Divides 8 2 ---> true`
	`Evenly Divides 7 3 ---> false`
	`Evenly Divides 12 36 ---> true`
		CO2

2.	Write a **Java Program** that takes two positive integers from **command-line arguments** and prints the result of first number raise to the power of second number.
	
	Note: Use Math.pow( )
	
	Sample Runs:
	`Power Calculator 2 5 = 32`
	`Power Calculator 7 3 = 343`
		CO2

3.	Write a **Java Program** to input a character from **command-line** and display the ASCII value of the entered character.
	
	Sample Runs:
	`ASCII value of A is 65`
	`ASCII value of z is 122`
	`ASCII Value of 1 is 49`
		CO2

4.	Write a **Java Program** that takes a double value t from the **command-line** and prints the value of cos (5t) + sin (7t). **Note:** Use `Math.cos() and Math.sin()` **Sample Run:** `cos(5*2.5) + sin(7*2.5) = 0.022172273710423074`	CO2

5.	Write a **Java Program** that takes three floating point values x, y, and z as **command-line arguments** and prints true if the values are strictly ascending or descending (x < y < z or x > y > z), and false otherwise.
	
	Sample Run:
	`Strict Order Check 3.5 7.2 10.8 ----> true`
	`Strict Order Check 9.0 4.5 1.2 ----> true`
	`Strict Order Check 5.0 5.0 6.0 ----> false`
		CO2

6.	Write a **Java Program** that takes three int values from the command line and prints them in ascending order. **Note:** Use Math.min() and Math.max(). **Sample Run:** `Ascending order: 5 8 12`	CO2

7.	Write a **Java Program** that prints the sum of two random integers between 1 and 6 (such as you might get when rolling dice).
	
	Note: Use Math.random( )
	
	Sample Run:
	`First die: 3`
	`Second die: 5`
	`Sum: 8`
		CO2

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8.	Write a **Java Program** that takes three positive integers from **command-line arguments** and prints true if any one of them is less than or equal to the product of the other two and false otherwise.
	
	Sample Run:
	`Product Check 2 3 6 -> true`
	`Product Check 5 2 20 -> false`
	`Product Check 4 5 19 -> true`
		CO2

9.	Write a **Java Program** to input a four-digit number from **command-line argument** and find sum of the first and last digit of the number. **Sample Run:** `Sum of the first and last digit of 4725 is: 9`	CO2
10.	Write a **Java Program** that prints five uniform random values between 0 and 1, their average value, and their minimum and maximum value. **Note:** Use Math.random(), Math.min(), and Math.max(). **Don't use any loop.**	CO2

Sample Run:

```
Random values:
0.5432
0.2311
0.8765
0.1123
0.6547
Average value: 0.4836
Minimum value: 0.1123
Maximum value: 0.8765
```

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