

اور اگر وہ ایمان لاتے اور پرہیزگاری کرتے تو خدا کے ہاں سے بہت اچھا صلہ ملتا۔ اے کاش، وہ اس سے واقف ہوتے۔ البقرة آیت ۱۰۳

The difference between stupidity and genius is that genius has its limits. Albert Einstein

### Solution Homework 03

#### [String and Math Functions, General Programming Practice]

##### Task 1:

Complete code written inside main function to show output given on right hand side?

```
String space="          ";
System.out.println("*");
System.out.println("*"+space.substring(0,0)+"*");
System.out.println("*"+space.substring(0,1)+"*");
System.out.println("*"+space.substring(0,2)+"*");
System.out.println("*"+space.substring(0,3)+"*");
System.out.println("*"+space.substring(0,4)+"*");
System.out.println("*****");
```

*							
*	*						
*		*					
*			*				
*				*			
*					*		
*	*	*	*	*	*	*	*

##### Task 2:

```
String space="          ";
System.out.println(space.substring(0,4)+"*");
System.out.println(space.substring(0,3)+"*"+space.substring(0,1)+"*");
System.out.println(space.substring(0,2)+"*"+space.substring(0,3)+"*");
System.out.println(space.substring(0,1)+"*"+space.substring(0,5)+"*");
System.out.println("*****");
```

				*			
		*		*			
	*			*			
*					*		
*	*	*	*	*	*	*	*

#### Use Random Function for Next 3 Tasks

##### Task 3

Print 5 real values between 200 and 300

```
System.out.println(Math.random()*100+200);
System.out.println(Math.random()*100+200);
System.out.println(Math.random()*100+200);
System.out.println(Math.random()*100+200);
System.out.println(Math.random()*100+200);
```

##### Task 4

Print 5 integer values between -200 & -100

```
System.out.println(Math.random()*100+(-200)); //additive factor is -200
System.out.println(Math.random()*100+(-200));
System.out.println(Math.random()*100+(-200));
System.out.println(Math.random()*100+(-200));
System.out.println(Math.random()*100+(-200));
```

##### Task 5

Print 5 capital alphabets

**Help:** Capital alphabets have ASCII code from 65 to 90. Type cast in char to show alphabet like

```
System.out.println((char)65); //will show A as output
System.out.println((char)(Math.random()*26+65));
System.out.println((char)(Math.random()*26+65));
System.out.println((char)(Math.random()*26+65));
System.out.println((char)(Math.random()*26+65));
System.out.println((char)(Math.random()*26+65));
```

##### Task 6

Write a program to take full name as input from user using **nextLine** method of Scanner class. Full name includes first name & last name like "Muhammad Hamid". Take two String variables **firstName** & **lastName**. Assign first part of name in firstName & second part in lastName. Finally display them in separate line. Don't hard code use appropriate functions from String class.

```
String name, fName, sName;
int start=0, end;
name=scan.nextLine();
end=name.indexOf(' ');
fName=name.substring(start, end);
start=end+1;
end=name.length();
sName=name.substring(start, end);
```

**Task 7:**

<p>Write program to calculate quadratic roots using formula <math>\frac{-b+\sqrt{b^2-4ac}}{2a}</math> and <math>\frac{-b-\sqrt{b^2-4ac}}{2a}</math>. Take a, b, c as double values from user, calculate x1, x2 roots and display answer. See the sample run on right hand side.</p>	<pre>A:2 B:5 C:3 X1:-1.0    X2:-1.5 A:4 B:9 C:5 X1:-1.0    X2:-1.25</pre>
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```
Scanner in=new Scanner(System.in);
double a, b, c, x1, x2, disc;
System.out.print("A:");
a = in.nextDouble();
System.out.print("B:");
b = in.nextDouble();
System.out.print("C:");
c = in.nextDouble();
disc = b * b - 4 * a * c;
disc = Math.sqrt(disc);
x1 = (-b + disc) / (2 * a);
x2 = (-b - disc) / (2 * a);
System.out.print("X1:"+x1);
System.out.println("\tx2:"+x2);
```