PRAKTEK PEMROGRAMAN BERORIENTASI OBJEK
IDENTIFIERS, KEYWORDS, and DATA TYPES

Identifiers

- Are names given to variable, class, or method
- Can start with a Unicode letter, underscor (_), or dollar signs ($)
- Are case-sensitive have no maximum length
- Examples:
  - identifier
  - userName
  - user_name
  - _sysvar1
  - $change

Keywords

- Are reserved words that have speial meaning to the Java technology compiler
- They Identify a data type name or program construct name.
- Examples:
  - **abstract**
  - **break**
  - **case**
  - **double**
  - **else**
  - …

Data Types

- There are 2 categories of data types: class types and primitive types
- class types are used for more complex types, are used to create objects
- primitive types are simple values, are not objects
- there are eight primitive data types, can be considered in four categories:
  - Logical - **boolean**
  - Textual – **char**
  - Integral – **byte, short, int, long**
  - Floating – **float, double**

Logical – **boolean**

- Logical values are represented using the **boolean** type, which takes on of two values: trus or false
- The **boolean** data type has two literal: *true* and *false*
- example:
  - boolean truth = true; // declares the variable truth as **boolean** type and assign it a // value of true

Textual – **char** and **String**

1. **char**
   - Represent a 16-bit Unicode character
   - Must have its literal enclosed in single quotes (' ')
   - Uses the following notations:
     - 'a' The letter a
     - '\t' A tab
     - '\????' A specific Unicode character ???? , is replaced with exactly four hexadecimal digits (for example: '\u03A6' is the Greek letter phi [Φ])
2. **String**
   - Is not primitive data type, it is a class
   - Used to represent sequences of characters
   - Has its literal enclosed in double quotes (“ “)
   - Can be used as follows
     - String greeting = “Good Morning !! \n”;
     - String errorMessage = “Record Not Found !”;

Integral – **byte, short, int, and long**

- Uses three forms – Decimal, octal, and hexadecimal
  - 2 The decimal form for the integer 2
  - 077 The octal value of 77 (63 in decimal)
  - 0xBAAC The hexadecimal value of BAAC (47788 in decimal)
- Literals have a default type of **int**
- Literals with the suffix L or l are type **long**
- Integral data types have the following ranges:

Integer Length	Type	Range
8 bits	**byte**	-2^7 to $2^7 - 1$
16 bits	**short**	-2^{15} to $2^{15} - 1$
32 bits	**int**	-2^{31} to $2^{31} - 1$
64 bits	**long**	-2^{63} to $2^{63} - 1$

Floating – **float** and **double**

- Literals have a default type of **double**
- Floating point literal includes either a decimal point or one of the following:
  - E or e (add exponetial value)
  - F or f (float)
  - D or d (double)
  - Example:
    - 3.14 (a double)
    - 6.02E23 (large floating point value)
    - 2.718F (simple float size value)

Float Length	Type
32 bits	**float**
64 bits	**double**

Source code example:

```
// Data Types and Variables Assignment
public class Assign {

	public static void main(String[] args) {
		// declare integer variables
		int x, y;
		// declare and assign floating point
		float z = 3.414f;
		// declare and assign double
		double w = 3.1415;
		// declare and assign boolean
		boolean truth = true;
		// declare character variable
		char c;
		// declare String variable
		String str;
		// declare and assign String variable
		String str1 = "bye";
		// assign value to char variable
		c = 'A';
		// assign value to String variable
		str = "Hi out there";
		// assign values to int variables
		x = 6;
		y = 1000;

		System.out.println(x);
		System.out.println(y);
		System.out.println(z);
		System.out.println(w);
		System.out.println(truth);
		System.out.println(c);
		System.out.println(str);
		System.out.println(str1);
	}

}
```