Java Programming I

Session 2

JAVA PROGRAMS, DATA, VARIABLES, AND CALCULATIONS

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Agenda

- **Keywords**
- **Data and variables**
- **Data Types**
- **Arithmetic expressions**
- **Logical operations**

Java Keywords

You can’t name variables using these reserved words

abstract	continue	for	new	switch
assert***	default	goto*	package	synchronized
boolean	do	if	private	this
break	double	implements	protected	throw
byte	else	import	public	throws
case	enum****	instanceof	return	transient
catch	extends	int	short	try
char	final	interface	static	void
class	finally	long	strictfp**	volatile
const*	float	native	super	while

* not used
** added in 1.2
*** added in 1.4
**** added in 5.0

Statements & Blocks

Ingredients of a program

```
1       public void blockOfCode() {
2           String statement_2 = "This is a statement";
3
4           String statement_1 = "This is all one "
5                                + "single Statement";
6
7           if (true) {
8               // Block of code
9           }
10      }
```

Variables

Initialization, Scope and lifetime

```
type name = value;
```

```
1     int other_variable = 10.5;
2     boolean variable = true;
3
4     if (variable){
5         int insideScope = 10; // Lives inside the brackets
6     }
7
8     int outsideScope = insideScope; // This is an error
9     System.out.println(“My var:” + variable); // This is ok
```

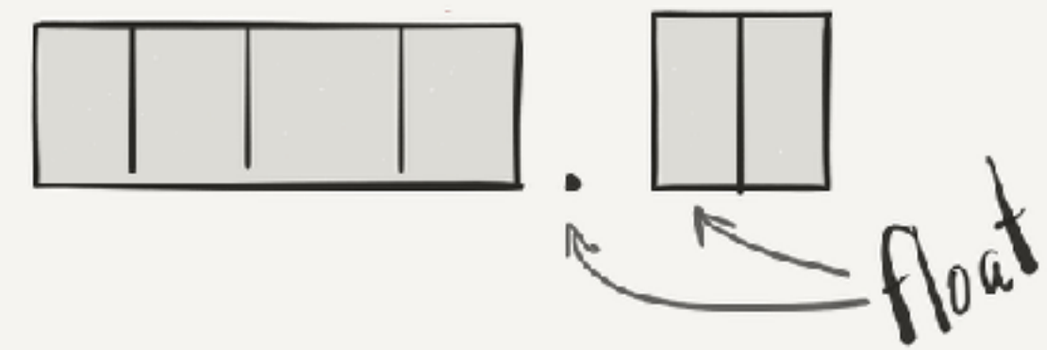
Primitive Data Types

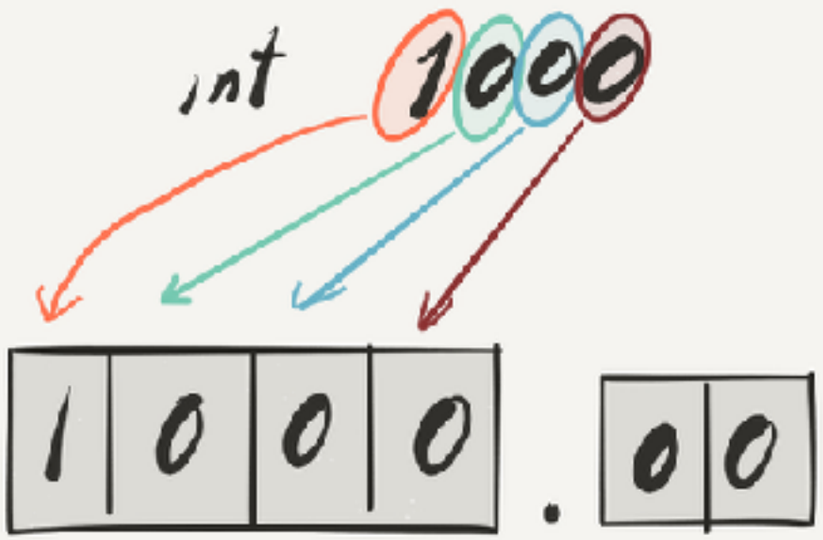
Representing data using text

Type	Meaning	Bits	Range
boolean	True or False		0 or 1
byte	8 bit integer	1 Byte	-128 - 127
char	Character	4 bytes	0 to 1,112,064
double	Very precise number	8 bytes	
float	Precise number	4 bytes	
int	Integer	4 bytes	-2 billion - 2 billion
long	Very long integer	8 bytes	-9 Quintillion - 9 Quintillion
short	Short Integer		-32,768 - 32,767

Casting

Not the Hollywood type





How to

```int x = 10;
float price = x; // 10.0
int y = ((int) price); // 10
price = Float.parseFloat("10.99");
```

Comments

Coder-to-coder notes

```
// Single line comment

/*
    Multi Line
    Comment
*/
```

Arithmetic Operators

How to declare variables

+	Add / Concat
-	Subtract
*****	Multiply
/	Divide
%	Mod
++	+1
—	-1
+=	+ *number*
-=	- *number*

Arithmetic Operators

A slight difference

```
1     public class MyClass{
2
3         public static void main(String args[]){
4             int x = 10;
5             x += 1;
6             System.out.println("x+=1: " +  x);
7             x =+ 1;
8             System.out.println("x=+1: " +  x);
9         }
10    }
```

Splitting Check

Hands on exercise

Splitting the check

- Dividing the check between x amount of people
- Adding 20% of tip for the waiter

```
public class CheckSplitter{

    public static double checkSplit(int people, double price){
        // code goes here
    }

    public static void main(String[] args) {
        double my_part = checkSplit(10, 100.0);
        System.out.println("Each one pays: "+ my_part);
    }

}
```

Logical Operators

How to declare variables

==	Equal to
!=	Not equal to
>	Greater than
<	Less than
>=	Greater than or equal to
<=	Less than or equal to
||	Logical Or
&&	Logical And

Logical Operators

Class Exercise

Or

A	B	A or B
0	0	0
0	1	1
1	0	1
1	1	1

And

A	B	A and B
0	0	0
0	1	0
1	0	0
1	1	1

```
public class TruthTable{

    public static void main(String args[]){

    }
}
```

Operator Priority

Operator precedence

High	**++ or —**
	*** then /**
	+ then -
	== then !=
	&&
	ll
Low	**=**

100 + 2 * 10 / 4 = 105

2 * 10 = 20 → 20 / 4 = 5 → 5 + 100

Car Rental

Homework

How much will I pay?

- Driver must be 18 or older
- Base fee is $20 per day
- Drivers under 21 years of age pays extra fee $57 per day
- Drivers between 21-24 years of age pays additional $20 per day

```
public class CarRental{

    public static long dailyRenterFee(int age){

        return -1; // Can't rent car
    }

    public static void main(String[] args) {
        long fee = dailyRenterFee(10);
        if (fee > 0){
            System.out.print("Driver pays, " + fee);
        }
    }

}
```