

Stack and Heap

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Java Heap

```
String s1 = "Cat";
```

```
String s2 = "Cat";
```

```
String s3 = new String("Cat");
```

```
s1 == s2; //true
```

```
s1 == s3; //false
```

Literal

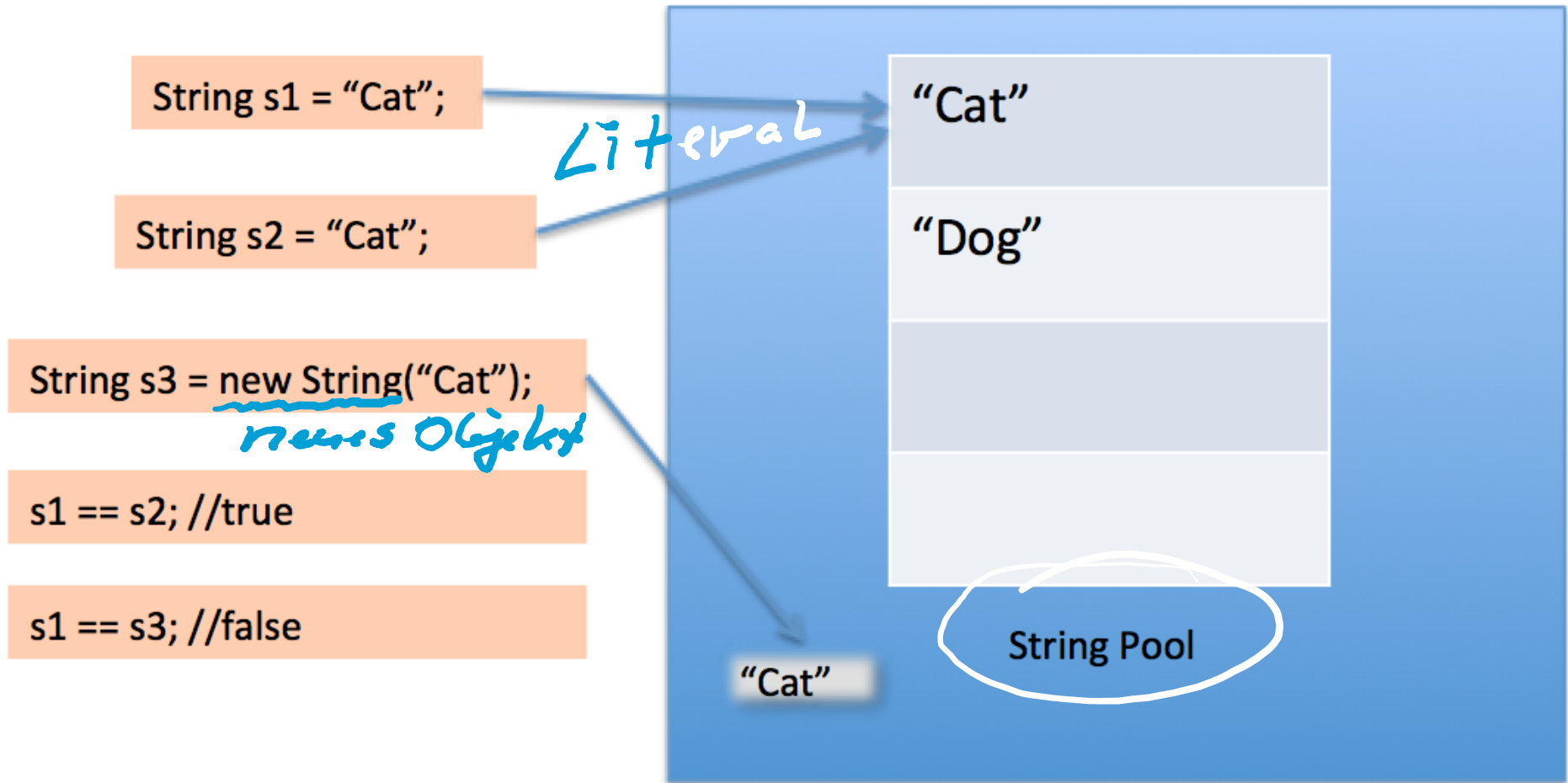
new Object

"Cat"

"Dog"

"Cat"

String Pool



```
public class Schueler{
```

```
int klassenst;
```

```
String name;
```

*globale Variable
Instanzvar.*

```
public Schueler(int k){
```

```
name = "Hans";
```

```
String vorname = "Müller";
```

Literal (lokal)

```
klassenst = k;
```

```
String schule = new String("JoGoHeGy");
```

```
char geschlecht='m';
```

lokale Variable

```
}
```

```
public void studentAnlegen(){
```

```
Schueler st = new Schueler (klassenst);
```

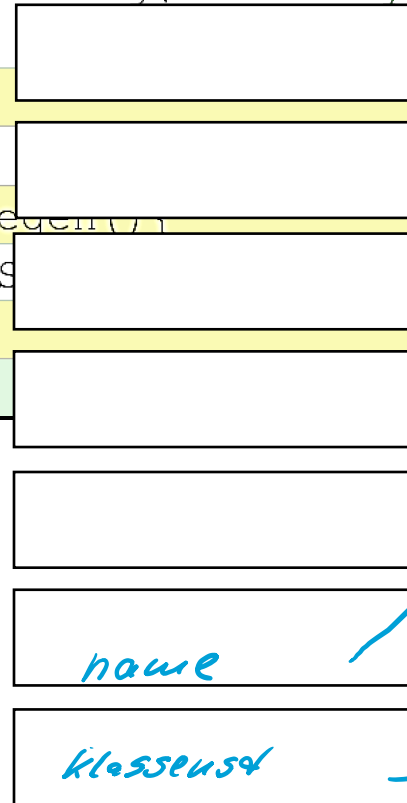
Objekt

```
}
```

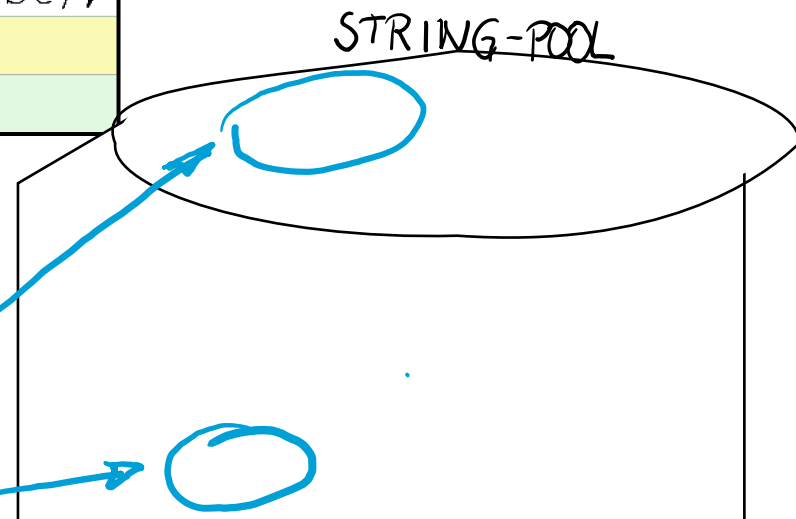
```
}
```

```
public class Schueler{  
    int klassenst;  
    String name;  
  
    public Schueler(int k){  
        name = "Hans";  
        String vorname = "Müller";  
        klassenst = k;  
        String schule = new String("JoGoHeGy");  
        char geschlecht='m';  
    }  
  
    public void studentAnlegen()  
    {  
        Schueler st = new Schueler(klassenst);  
    }  
}
```

Speicherplatz reservieren



STACK



HEAP

```

public class Schueler{
    int klassenst; ✓
    String name; ✓

    public Schueler(int k){
        name = "Hans";
        String vorname = "Müller";
        klassenst = k;
        String schule = new String("JoGoHeGv");
        char geschlecht='m';
    }

    public void studentAnlegen(){
        Schueler st = new Schueler(klassenst);
    }
}

```

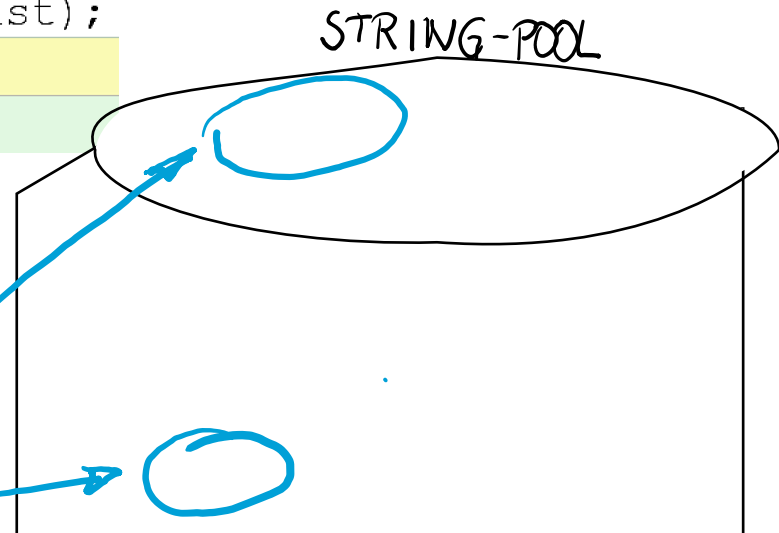
✓ ~~P~~ Parameter

k = ...

name

klassenst

STACK



STRING-POOL

HEAP

```
public class Schueler{
```

```
int klassenst; ✓
```

```
String name; ✓
```

```
public Schueler(int k){ ✓
```

```
name = "Hans"; ✓
```

```
String vorname = "Müller"; Literal → Wert im Stringpool
```

```
klassenst = k;
```

```
String schule = new String("JoGoHeGy");
```

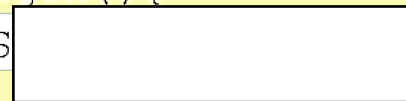
```
char geschlecht='m';
```

```
}
```

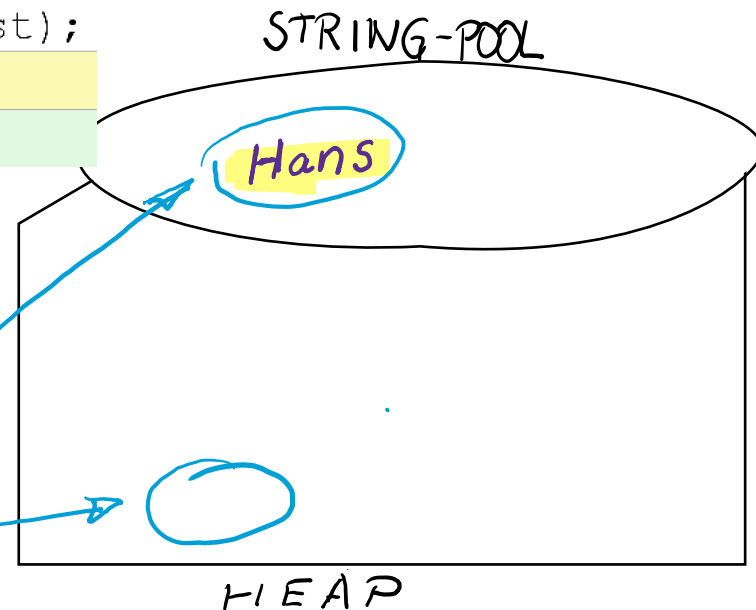
```
public void studentAnlegen()
```

```
Schueler st = new Schueler(k, vorname, schule, geschlecht);
```

```
}
```



STACK

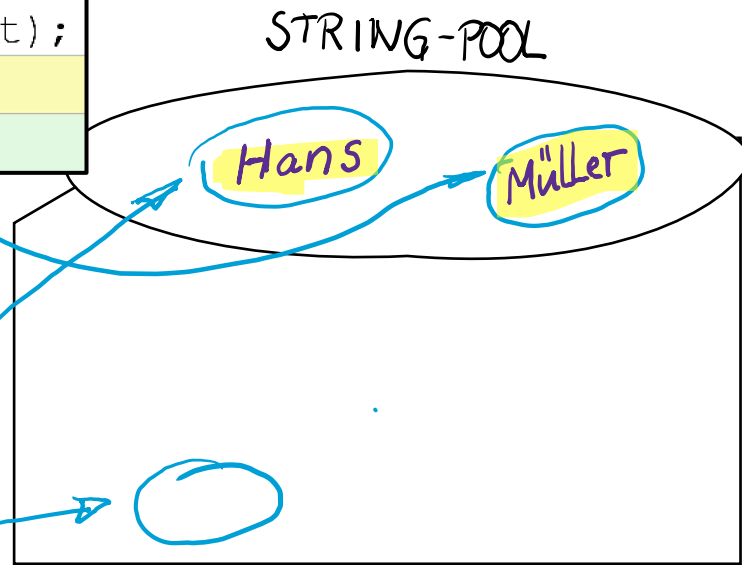


```
public class Schueler{  
    int klassenst; ✓  
    String name; ✓  
  
    public Schueler(int k){ ✓  
        name = "Hans"; ✓  
        String vorname = "Müller"; ✓ } Literal  
        klassenst = k;  
        String schule = new String("JoGoHeGy");  
        char geschlecht='m';  
    }  
  
    public void studentAnlegen(){  
        Schueler st = new Schueler(k, name, klassenst);  
    }  
}
```

Stack frame contents (from top to bottom):

- vorname
- k = ...
- name
- klassenst

STACK



HEAP

```

public class Schueler{
    int klassenst; ✓
    String name; ✓

    public Schueler(int k){ ✓
        name = "Hans"; ✓
        String vorname = "Müller"; ✓
        klassenst = k; ✓ Wert übergeben
        String schule = new String("JoGoHeGy");
        char geschlecht='m';
    }

    public void studentAnlegen(){
        Schueler st = new Schueler(klassenst);
    }
}

```

klassenstufe = ...

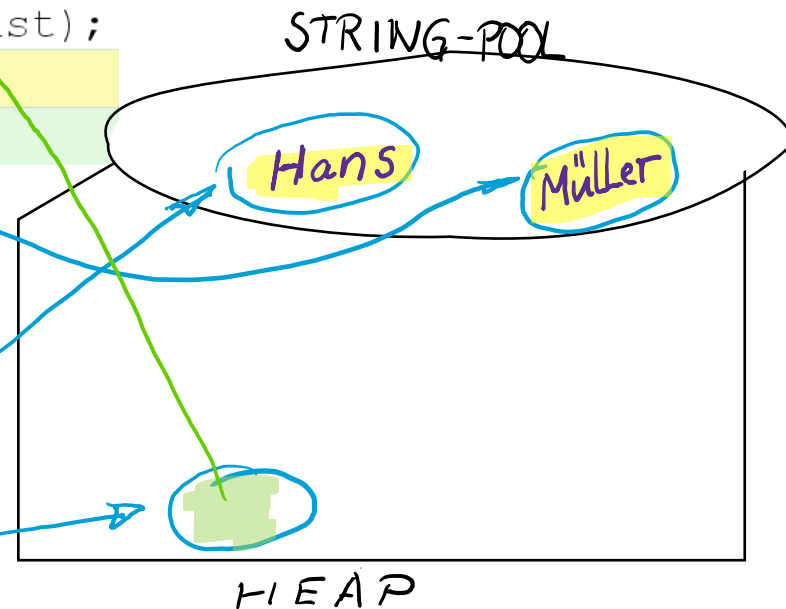
vorname

k = ...

name

klassenst

STACK




```
public class Schueler{
```

```
    int klassenst; ✓
```

```
    String name; ✓
```

```
    public Schueler(int k){ ✓
```

```
        name = "Hans"; ✓
```

```
        String vorname = "Müller"; ✓
```

```
        klassenst = k; ✓
```

```
        String schule = new String("JoGoHeGy"); ✓ → String-Objekt
```

```
        char geschlecht='m';
```

```
    }
```

```
    public void studentAnlegen()
```

```
    { Schueler st = new Schueler(klassenst);
```

```
    }
```

```
}
```

schule

klassenstufe = ...

vorname

k = ...

name

klassenst

STACK

STRING-POOL

Hans

Müller

*String
obj*

JoGoHeGy

HEAP

```

public class Schueler{
    int klassenst; ✓
    String name; ✓

    public Schueler(int k){ ✓
        name = "Hans"; ✓
        String vorname = "Müller"; ✓
        klassenst = k; ✓
        String schule = new String("JoGoHeGy"); ✓
        char geschlecht='m'; ✓
    }

    public void studentAnlegen(){
        Schueler st = new Schueler(klassenst, name, vorname);
    }
}

```

geschlecht = 'm'

Schule

klassenstufe = ...

Vorname

Schueler (k = ...)

name

klassenst

STACK

STRING-POOL

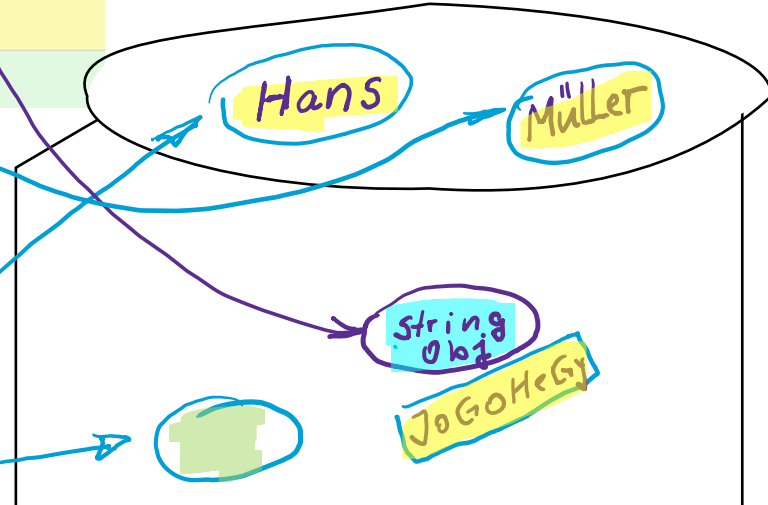
Hans

Müller

String
obj

JoGoHeGy

HEAP



```

klassenst = k; ✓
String schule = new String("JoGoHeGy"); ✓
char geschlecht='m'; ✓
}

```

```

public void studentAnlegen(){
    Schueler st = new Schueler (klassenst);
}

```

neues Objekt

