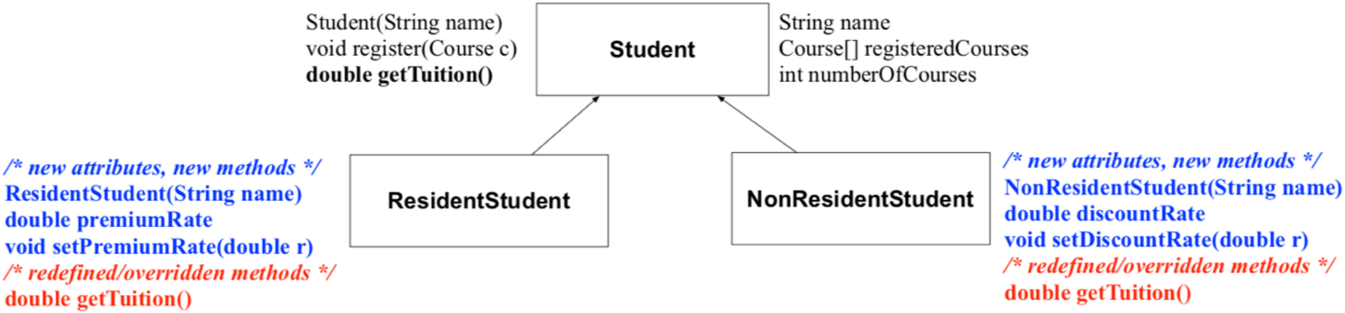
Lecture 22

Thursday Nov. 23


Student(String name)
void register(Course c)
double getTuition()

Student

String name
Course[] registeredCourses
int numberOfCourses

ResidentStudent

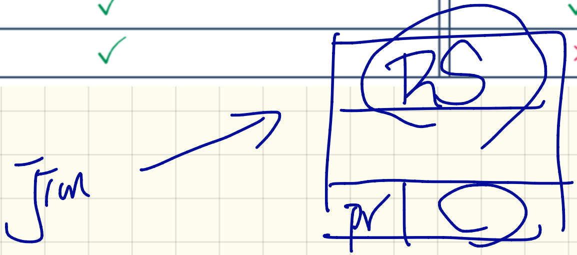
/ new attributes, new methods */*
ResidentStudent(String name)
double premiumRate
void setPremiumRate(double r)
/ redefined/overridden methods */*
double getTuition()

NonResidentStudent

/ new attributes, new methods */*
NonResidentStudent(String name)
double discountRate
void setDiscountRate(double r)
/ redefined/overridden methods */*
double getTuition()

```
Student s = new Student("Stella");
ResidentStudent rs = new ResidentStudent("Rachael");
NonResidentStudent nrs = new NonResidentStudent("Nancy");
```

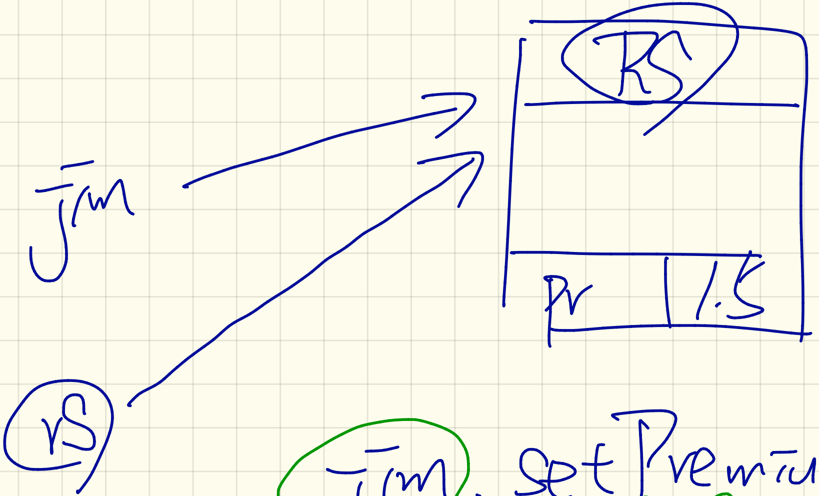
<table>
<tr><th></th><th>name</th><th>rcs</th><th>noc</th><th>reg</th><th>getT</th><th>pr</th><th>setPR</th><th>dr</th><th>setDR</th></tr>
<tr><td>s.</td><td colspan="5">✓</td><td colspan="4">✗</td></tr>
<tr><td>rs.</td><td colspan="5">✓</td><td colspan="2">✓</td><td colspan="2">✗</td></tr>
<tr><td>nrs.</td><td colspan="5">✓</td><td colspan="2">✗</td><td colspan="2">✓</td></tr>
</table>



ST: ResidentStudent

```
*
ResidentStudent rS = (ResidentStudent) jim;
```

ST: Student



```
jim.setPremiumRate(1.5) X
```

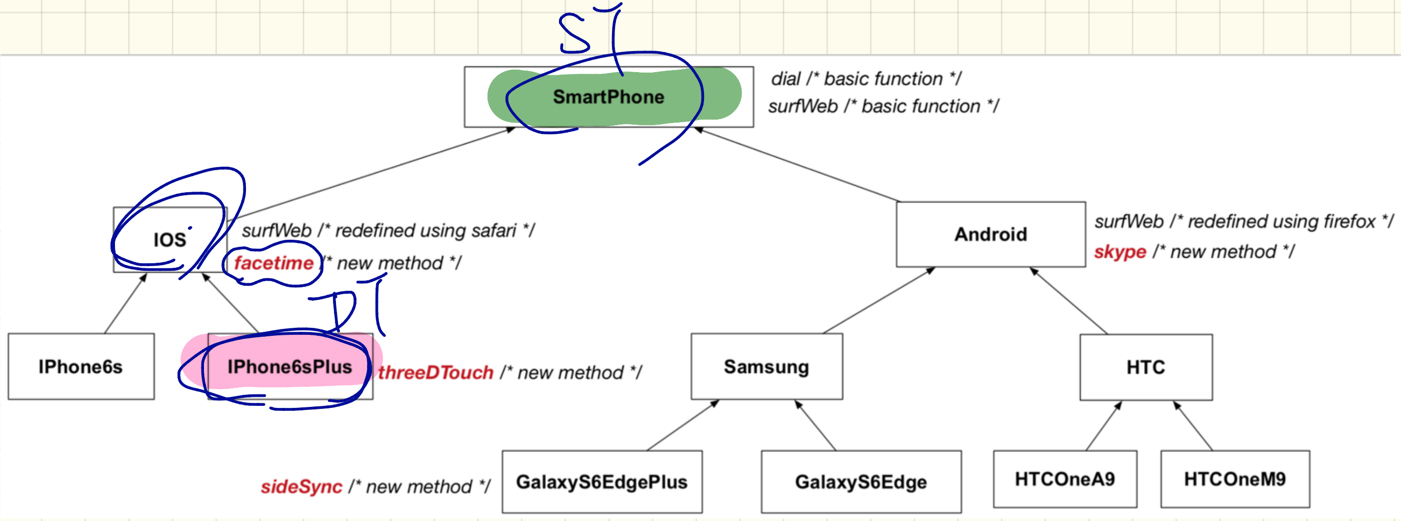
ST: Student

```
Student jim = new RS(. -);

① ResidentStudent rs = (RS) jim;
     rs. setPr(1.5);

②          ((RS) jim). setPr(1.5)

③ (RS)(jim . setPr(1.5))
```

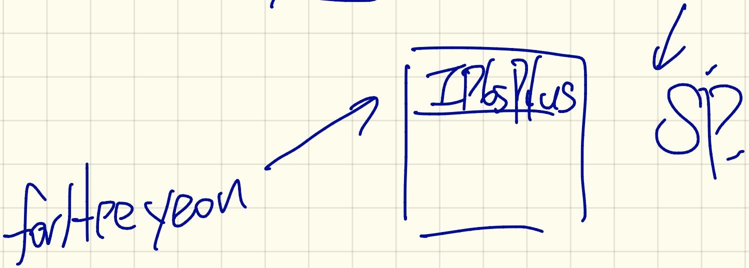
Student jim = <u>new</u> RS(...);

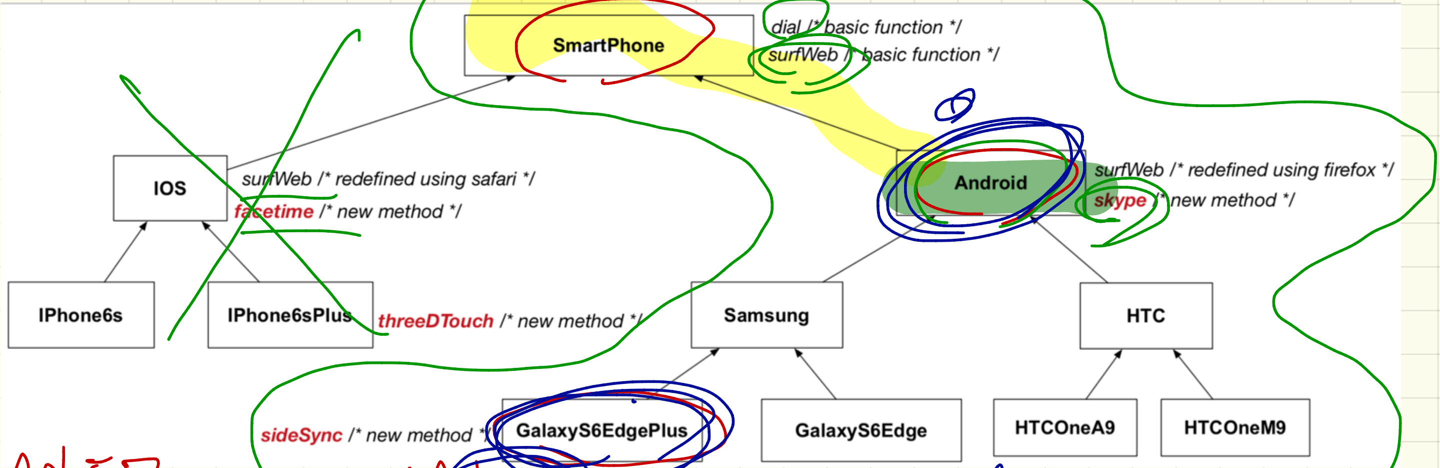
Student s;

$\underset{\text{Student}}{\underline{s}\downarrow}$ = $\underset{\text{ST: Student}}{\underbrace{\text{jim}}\downarrow}$;


ST
SmartPhone
dial /* basic function */
surfWeb /* basic function */
IOS
surfWeb /* redefined using safari */
facetime /* new method */
DT
Android
surfWeb /* redefined using firefox */
skype /* new method */
IPhone6s
IPhone6sPlus
threeDTouch /* new method */
Samsung
HTC
sideSync /* new method */
GalaxyS6EdgePlus
GalaxyS6Edge
HTCOneA9
HTCOneM9

? IOS forHeeyeon = aPhone;

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GalaxyS6Edge
HTCOneA9
HTCOneM9

GS6EP ga = (GS6EP) phone; → ST: Android

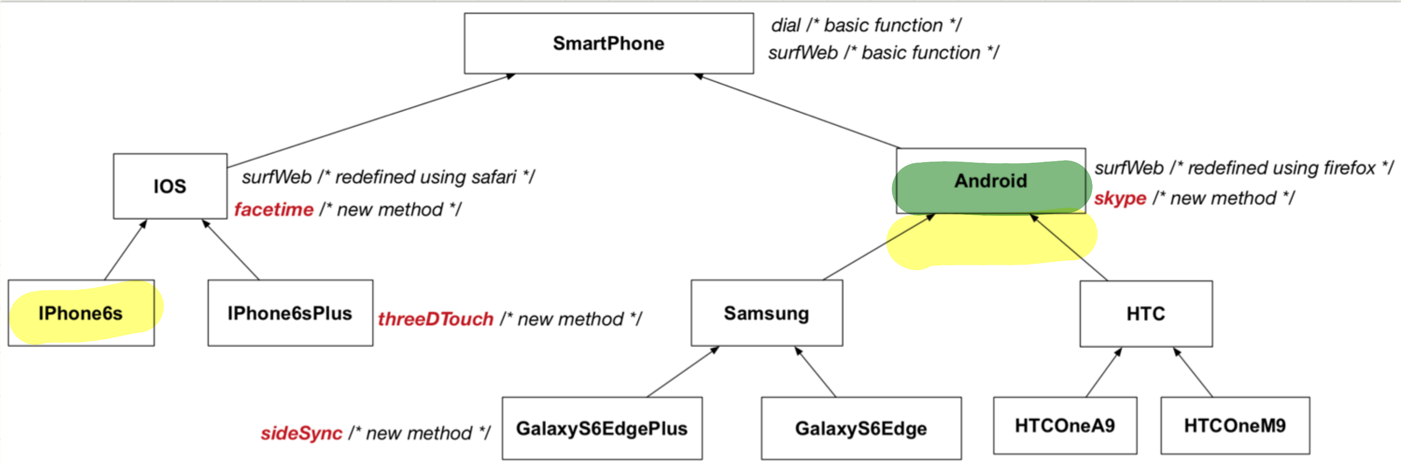
Android ga. sideSyn.

phone = [- - -];

phone.dial surfWeb skype

SmartPhone sp = (SmartPhone) phone; → ST: Android

sp.dial surfWeb skype ✗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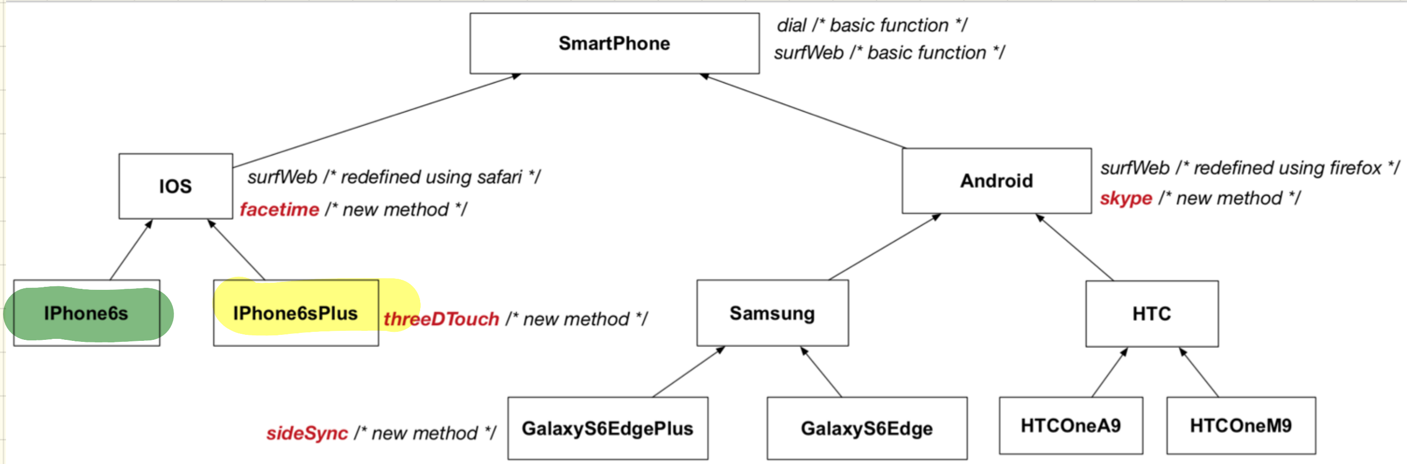
Android phone = ✗

IPhone6s ip6s = (IP6s) phone;

ST: Android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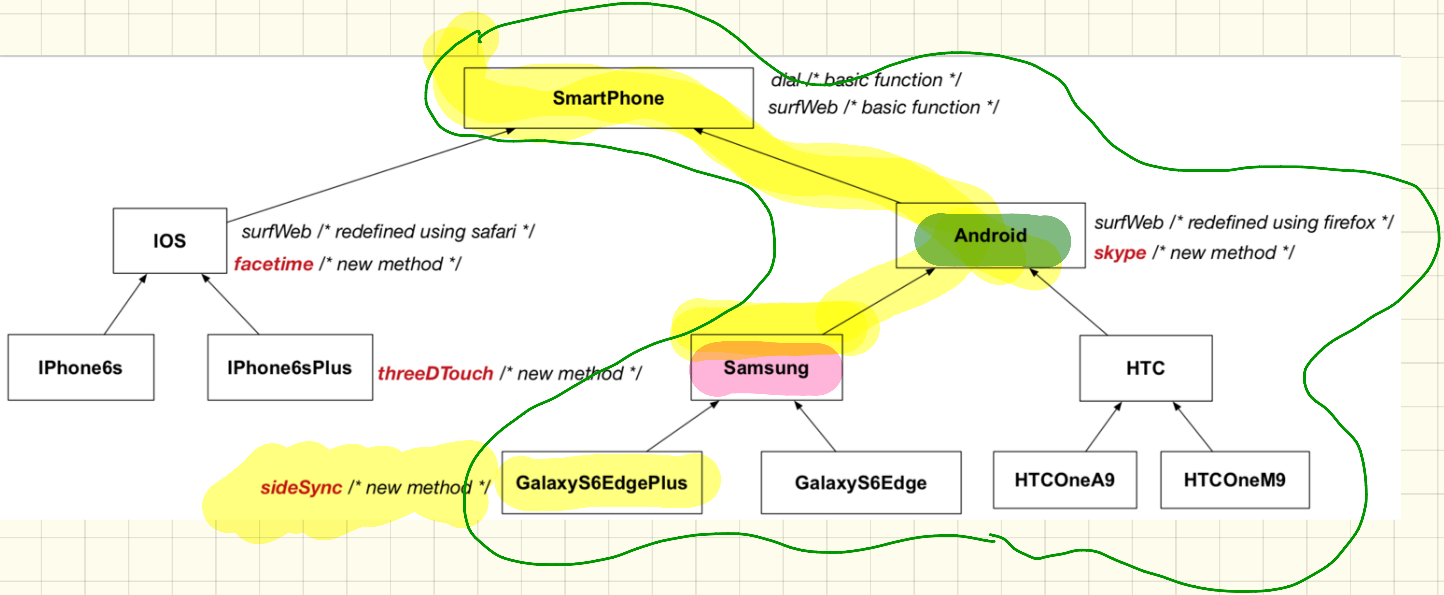
IP6s p = [. _]

IP6sPlus p2 = (IP6sPlus) p; ✗

ST
IP6s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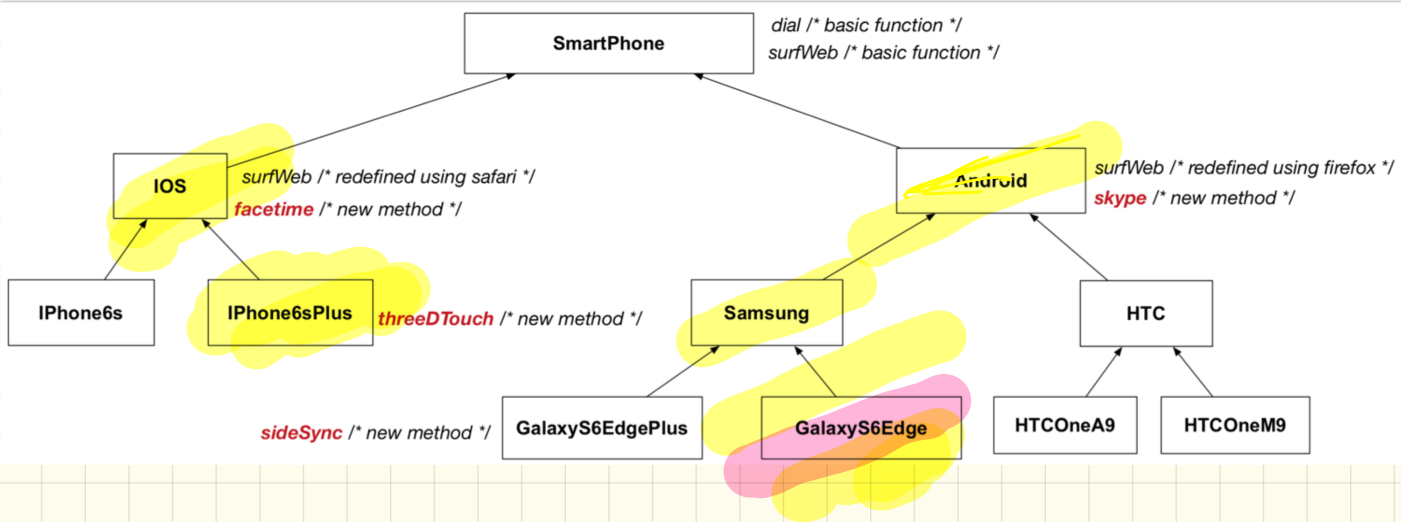
```
Android p = new Samsung();
① (Samsung) p
② (GalaxyS6EP) p
```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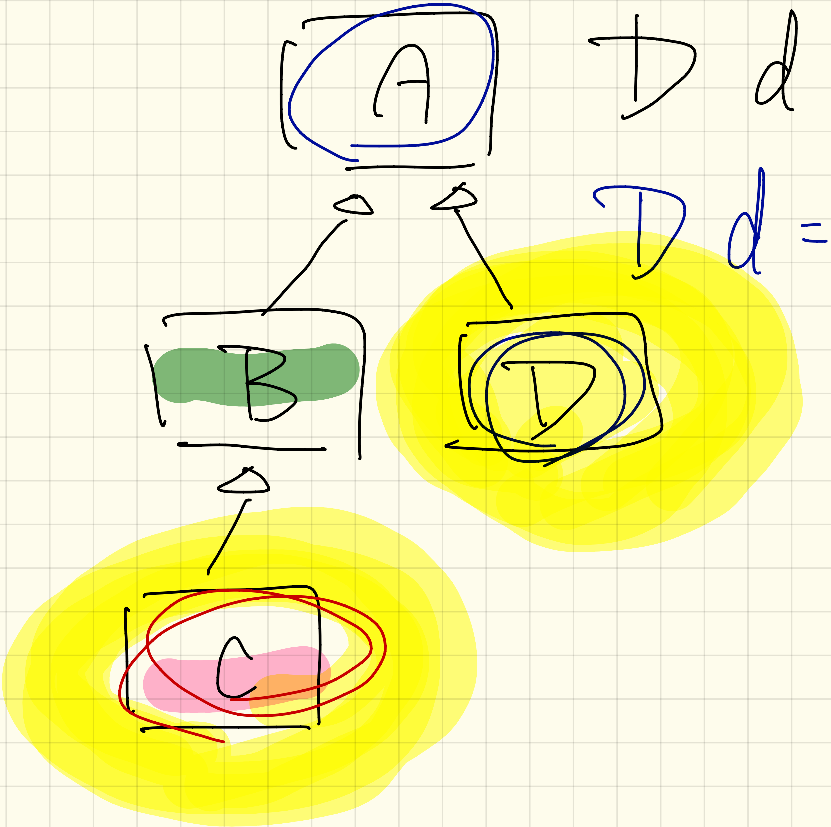
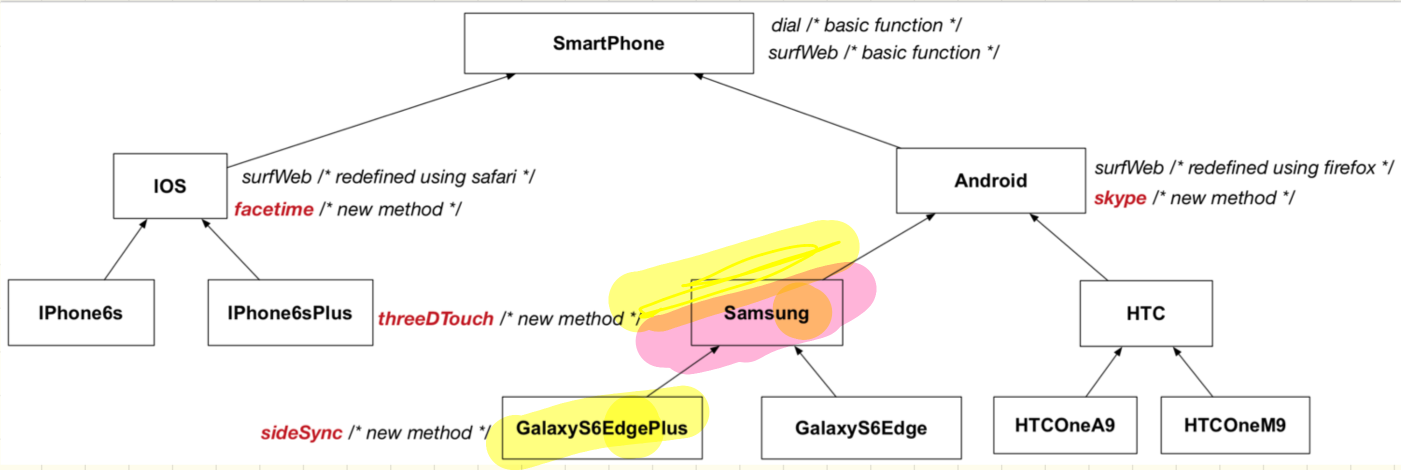


```
D d = (D) b;
D d = (D) ((A) b)
```



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HTCOneM9

declaration → Student[ ] ss ;

Student s;

① Static type of each item in ss is Student.

② dynamic type of each item in ss is Student.

```
Student[ ] ss;

void addRS(RS rs) {
  ss[c] = rs;
  c ++;
}
```

ST: Student

ST: RS

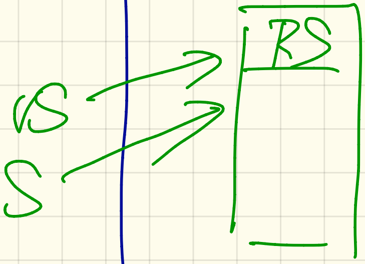
```
SMS() {
  ss = new Student[10];
}
```

parameter

```
class SMS {
    Student[] ss;
    void addStudent(Student s) {
        ss[c] = s;
        c++;
    }
}
```

① rS = s

② s = rS



```
SMS sms = new SMS();
RS rS = new RS("Rachael");
✓ sms.addStudent(rS);
```

argument