***** Tracking NULL Checks in Open-Source Java Systems *****

- If statments in code: {
if ((name == null) || (adress == null))
if (customers != null)
if ((c.name != null) && (c.adress != null))
if (c != null)
if ((customers.get(i).name.equals(name)) && (customers.get(i) != null))
if ((newCity != null) && (newStreet != null))
if ((cName == null) || (cAddress == null) || (cStreet == null))
if ((obj != null) && (customer2.adress != null))
if (b)
if (customer2.getCustomerbyName(cName) == null)
if (!b)
if ((null == city2) || (Street2 == null))
if (ad.city.equals("syria"))
if (ad != null)
}
==========
- Null comprands : {
Null comparand[1] := name
Null comparand[2] := adress
Null comparand[3] := customers
Null comparand[4] := c.name
Null comparand[5] := c.adress
Null comparand[6] := c
Null comparand[7] := customers.get(i)
Null comparand[8] := newCity
Null comparand[9] := newStreet
Null comparand[10] := cName
Null comparand[11] := cAddress
Null comparand[12] := cStreet
Null comparand[13] := obj
Null comparand[14] := customer2.adress
Null comparand[15] := customer2.getCustomerbyName(cName)
Null comparand[16] := city2
Null comparand[17] := Street2
Null comparand[18] := ad
}

==========
-Null comprands type :{
name ,Type := Name
adress ,Type := Name
customers ,Type := Name
c.name ,Type := field access
c.adress ,Type := field access
c ,Type := Name
customers.get(i) ,Type := method call
newCity ,Type := Name
newStreet ,Type := Name
cName ,Type := Name
cAddress ,Type := Name
cStreet ,Type := Name
obj ,Type := Name
customer2.adress ,Type := field access
customer2.getCustomerbyName(cName) ,Type := method call
city2 ,Type := Name
Street2 ,Type := Name
ad ,Type := Name
==========
Null-c (name) Is a memeber variable
Null-c (adress) Is a memeber variable
Null-c (customers) Is a memeber variable
Null-c (c) Is a parameter variable
Null-c (newCity) Is a parameter variable
Null-c (newStreet) Is a parameter variable
Null-c (cName) Is a local variable
Null-c (cAddress) Is a local variable
Null-c (cStreet) Is a local variable
Null-c (obj) Is a local variable
Null-c (customer2.getCustomerbyName(cName)) Is a local variable
Null-c (city2) Is a parameter variable
Null-c (Street2) Is a local variable
Null-c (ad) Is a local variable

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- Null comparands definition :
NC_Def := ' String name; '
NC_Def := ' name = null; '

NC_Def := ' this.name = name; '
NC_Def := ' Address adress; '
NC_Def := ' adress = null; '
NC_Def := ' this.adress = new Address(city, street); '
NC_Def := ' ArrayList<Customer> customers; '
NC_Def := ' customers = null; '
NC_Def := ' customers = new ArrayList<>(); '
NC_Def := ' String cName = in.next(); '
NC_Def := ' String cAddress = in.next(); '
NC_Def := ' String cStreet = in.next(); '
NC_Def := ' Object obj = (String) customer2.name; '
NC_Def := ' String city2 = in.next(); '
NC_Def := ' String Street2 = in.next(); '
NC_Def := ' Address ad = customer1.changeAddress(city2, cStreet); '
==========

- No assigned value to name in line 7, you should assign any value

- null assigned to name in line12, you should assign another value insteded of null
- name is a reference value assigned to this.name in line 18, you should check your assigned value.

- No assigned value to adress in line 8, you should assign any value

- null assigned to adress in line13, you should assign another value insteded of null
- new Address(city, street) is a Object creation assigned to this.adress in line 19, you should check your assigned value.

- No assigned value to customers in line 9, you should assign any value

- null assigned to customers in line14, you should assign another value insteded of null
- new ArrayList<>() is a Object creation assigned to customers in line 20, you should check your assigned value.

- in.next() is a method call assigned to String cName in line 68, you should check your assigned value.

- in.next() is a method call assigned to String cAddress in line 69, you should check your assigned value.

- in.next() is a method call assigned to String cStreet in line 70, you should check your assigned value.

- (String) customer2.name is a casting assigned to Object obj in line 80, you should check your assigned value.

- in.next() is a method call assigned to String city2 in line 95, you should check your assigned value.

- in.next() is a method call assigned to String Street2 in line 96, you should check your assigned value.

- customer1.changeAddress(city2, cStreet) is a method call assigned to Address ad in line 100, you should check your assigned value.

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Average of If statments that contains null :=79.0%

Average of Members from all Null_comparand :=17.0%

Average of Parameters from all Null_comparand :=22.0%

Average of Locals from all Null_comparand :=39.0%

Average of Methode calls from all Null_comparand :=11.0%

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