MACHINE
   SubClassOf_Repair
INCLUDES
   xOwl
DEFINITIONS
   $SET\_PREF\_DEFAULT\_SETSIZE == 25$;
   $SET\_PREF\_MAX\_OPERATIONS == 20$;
   $SET\_PREF\_SHOW\_EVENTB\_ANY\_VALUES ==$ **FALSE** ;

   $inheritence == ((subClassExp \; classOfClassExp)^{-1} \; (superClassExp \; classOfClassExp))$;
   $disjunctionExp == classOfClassExp \otimes disjointClassExp$;
   $disjunction == (\mathbf{ran}(disjunctionExp) \; \mathbf{ran}(disjunctionExp)^{-1}) \text{ - } \mathbf{id}(Class)$;
   $super(cls) == \mathbf{closure}(inheritence)[cls]$;
   $super1(cls) == \mathbf{closure1}(inheritence)[cls]$;

   $inconsistentClasses == \{ cl \mid cl \in Class \land disjunction[super(\{cl\})] \cap super(\{cl\}) \neq \emptyset \}$

INVARIANT
   $inconsistentClasses = \emptyset$

OPERATIONS
repairSubClassAxiom(*iri1*, *iri2*, *iri3*) =
   PRE $iri1 \in STRING \land iri2 \in STRING \land iri3 \in STRING$ **THEN**
     ANY
       cl1, *cl2*, *cl3*, *axiom*
     WHERE
       $cl1 \in Class \land cl2 \in Class \land cl3 \in Class \land axiom \in SubClassOf$
       $\land \; name(cl1) = iri1 \land name(cl2) = iri2 \land name(cl3) = iri3$
       $\land \; cl1 \in inconsistentClasses$
       $\land \; \{cl2, cl3\} \subseteq super(\{cl1\})$
       $\land \; \{cl2, cl3\} \cap (super1(disjunction[super(\{cl1\})]) \text{ - } \mathbf{dom}(disjunction)) = \emptyset$
       $\land \; \{cl2\} = (subClassExp \; classOfClassExp)[\{axiom\}]$
       $\land \; \{cl3\} = (superClassExp \; classOfClassExp)[\{axiom\}]$
     THEN
       SubClassOf_Free(*axiom*)
     END
   END
END