```
;Header and description
(define (domain safety2)

    ;remove requirements that are not needed
    (:requirements :strips :fluents :timed-initial-literals :typing :conditional-
    effects :negative-preconditions :duration-inequalities :equality)

    ;todo: enumerate types and their hierarchy here, e.g. car truck bus - vehicle
    (:types
        emergency_patient
        school hospital firestation
        ambulance
        bed
    )

    ;todo: define numeric functions here
    (:functions
        (fuel-amount ?ambulance - ambulance)
        (time ?ambulance - ambulance)
        (distance1 ?firestation - firestation ?school - school)
        (distance2 ?school - school ?hospital - hospital)
        (distance3 ?hospital - hospital ?firestation - firestation)
    )

    ;todo: define predicates here
    (:predicates
        (in ?emergency_patient - emergency_patient ?school-or-ambulance-or-hospital-
    or-bed - (either school ambulance hospital bed))
        (enough ?bed ?hospital)
        (at ?ambulance - ambulance ?school-or-firestation-or-hospital - (either school
    firestation hospital))
        (empty ?ambulance-or-bed - (either ambulance bed))
    )

    ;define actions here
    (:action ambulance_goes_to_school
        :parameters
            (
                ?ambulance - ambulance
                ?school - school
                ?firestation - firestation
            )
        :precondition
            (and
                (at ?ambulance ?firestation)
                (not (at ?ambulance ?school))
                (empty ?ambulance)
                (> (fuel-amount ?ambulance) 10)
            )
        :effect
            (and (at ?ambulance ?school)
                 (not (at ?ambulance ?firestation))
                 (decrease (fuel-amount ?ambulance) (* (distance1 ?firestation ?
    school) 3))
                 (increase (time ?ambulance) (* (distance1 ?firestation ?school) 10))
            )
    )

    (:action patient_load_ambulance
        :parameters
```

```
                (
                  ?emergency_patient - emergency_patient
                  ?school - school
                  ?ambulance - ambulance
                )
      :precondition
                (and (in ?emergency_patient ?school)
                     (empty ?ambulance)
                     (at ?ambulance ?school)
                )
      :effect
            (and (not (in ?emergency_patient ?school))
                 (in ?emergency_patient ?ambulance)
                 (not (empty ?ambulance))
                 (increase (time ?ambulance) 5)
                )
    )


    (:action move_ambulance_to_hospital
      :parameters
                (
                  ?ambulance - ambulance
                  ?school - school
                  ?hospital - hospital
                  ?emergency_patient - emergency_patient
                )
      :precondition
                (and (at ?ambulance ?school)
                     (not (empty ?ambulance))
                     (in ?emergency_patient ?ambulance)
                     (not (in ?emergency_patient ?school))
                     (> (fuel-amount ?ambulance) 10)
                )
      :effect
            (and (not (at ?ambulance ?school))
                 (at ?ambulance ?hospital)
                 (decrease (fuel-amount ?ambulance) (* (distance2 ?school ?hospital)
  3))
                 (increase (time ?ambulance) (* (distance2 ?school ?hospital) 10))

                )
    )

    (:action patient_unload_ambulance
      :parameters
                (
                  ?emergency_patient - emergency_patient
                  ?ambulance - ambulance
                  ?hospital - hospital
                  ?school - school
                )
      :precondition
                (and (in ?emergency_patient ?ambulance)
                     (at ?ambulance ?hospital)
                     (not (at ?ambulance ?school))
                     (not (empty ?ambulance))
                )
      :effect
            (and (not (in ?emergency_patient ?ambulance))
                 (in ?emergency_patient ?hospital)
```

```
                    (empty ?ambulance)
                    (increase (time ?ambulance) 5)
             )
      )

      (:action patient_go_to_bed
        :parameters
                (
                   ?emergency_patient - emergency_patient
                   ?bed - bed
                   ?hospital - hospital
                )
        :precondition
                (and (in ?emergency_patient ?hospital)
                     (not (in ?emergency_patient ?bed))
                     (enough ?bed ?hospital)
                )
        :effect
             (and (not (enough ?bed ?hospital))
                  (in ?emergency_patient ?bed)
             )
      )

      (:action move_back_ambulance_to_school
        :parameters
                (
                   ?emergency_patient - emergency_patient
                   ?hospital - hospital
                   ?ambulance - ambulance
                   ?school - school
                   ?bed - bed
                )
        :precondition
                (and (not (in ?emergency_patient ?ambulance))
                     (in ?emergency_patient ?bed)
                     (at ?ambulance ?hospital)
                     (not (at ?ambulance ?school))
                     (empty ?ambulance)
                     (> (fuel-amount ?ambulance) 10)
                )
        :effect
             (and (at ?ambulance ?school)
                  (not (at ?ambulance ?hospital))
                  (decrease (fuel-amount ?ambulance) (* (distance2 ?school ?hospital)
  3))
                  (increase (time ?ambulance) (* (distance2 ?school ?hospital) 10))
             )
      )

      (:action come_home_ambulance
         :parameters
                   (
                         ?ambulance - ambulance
                         ?firestation - firestation
                         ?hospital - hospital
                         ?school - school
                         ?emergency_patient - emergency_patient
                   )
         :precondition
                   (and (at ?ambulance ?hospital)
```

```
                                (not (at ?ambulance ?school))
                                (not (at ?ambulance ?firestation))
                                (empty ?ambulance)
                                (not (in ?emergency_patient ?school))
                                (> (fuel-amount ?ambulance) 10)
                            )
            :effect
                    (and (at ?ambulance ?firestation)
                            (not (at ?ambulance ?hospital))
                            (decrease (fuel-amount ?ambulance) (* (distance3 ?hospital ?
    firestation) 3))
                        )
        )


        (:action recharge
            :parameters
                        (
                            ?ambulance - ambulance
                            ?firestation - firestation
                        )
            :precondition
                        (and (at ?ambulance ?firestation)
                            (empty ?ambulance)
                            (<= (fuel-amount ?ambulance) 50)
                        )
            :effect
                (and (increase (fuel-amount ?ambulance) 50))
        )


    )
```