

FashionShow

December 31, 2017

Contents

1	ClothDisplayed	2
2	Event	3
3	FashionShow	4
4	Notification	5
5	Person	6
6	PieceOfCloth	8
7	Presentation	9
8	Room	9
9	RunwayShow	11
10	Ticket	11
11	Utils	13
12	ClothDisplayedTest	14
13	FashionShowTest	15
14	NotificationTest	16
15	PersonTest	17
16	PieceOfClothTest	19
17	PresentationTest	20
18	RoomTest	21
19	RunwayShowTest	22
20	Tests	24
21	TicketTest	24

1 ClothDisplayed

```

class ClothDisplayed
types
-- TODO Define types here
values
-- TODO Define values here
instance variables
public model : Person;
public cloth : PieceOfCloth;
public runway : RunwayShow;

inv model.clothSize = cloth.size;

operations
-- TODO Define operations here
-- constructor

public ClothDisplayed: Person * PieceOfCloth * RunwayShow ==> ClothDisplayed
  ClothDisplayed(p, c, r) == (
    model := p;
    cloth := c;
    runway := r;
    return self;
  )
pre c.creator in set elems r.organizers and
  c.size = p.clothSize;

-- set model

public setModel : Person ==> ()
  setModel(p) == (
    model := p;
  )
pre cloth.size = p.clothSize;

-- set cloth

public setCloth : PieceOfCloth ==> ()
  setCloth(c) == (
    cloth := c;
  )
pre c.creator in set elems runway.organizers and
  c.size = model.clothSize;

-- set runway show

public setRunwayShow : RunwayShow ==> ()
  setRunwayShow(r) == (
    runway := r;
  )
pre cloth.creator in set elems r.organizers;

functions
-- TODO Define functiones here
traces
-- TODO Define Combinatorial Test Traces here
end ClothDisplayed

```

Function or operation	Line	Coverage	Calls
ClothDisplayed	16	100.0%	1
setCloth	34	100.0%	2
setModel	27	100.0%	2
setRunwayShow	42	100.0%	1
ClothDisplayed.vdmpp		100.0%	6

2 Event

```

class Event
instance variables
  public fashionShow : FashionShow;
  public organizers : seq1 of (Person);
  public place : Room;
  public name : Utils'string;
  public startDate : Utils'date;
  public endDate : Utils'date;
  -- invariants
inv Utils'isOldestDate(startDate, endDate);

operations

-- set fashionShow

  public setFashionShow : FashionShow ==> ()
    setFashionShow(f) ==
      fashionShow := f;

-- set organizers

  public setOrganizers : seq1 of (Person) ==> ()
    setOrganizers(o) ==
      organizers := o;

-- add organizer

  public addOrganizer : Person ==> ()
    addOrganizer(p) ==
      organizers := organizers ^ [p];

-- set place

  public setPlace : Room ==> ()
    setPlace (r) ==
      place := r;

-- set name

  public setName : Utils'string ==> ()
    setName(n) ==
      name := n;

-- set start date

  public setStartDate : Utils'date ==> ()
    setStartDate(d) ==
      startDate := d;

-- set end date

```

```

public setEndDate : Utils`date ==> ()
  setEndDate(d) ==
    endDate := d;

-- end event and empty the room

public endEvent : () ==> ()
  endEvent() ==
    place.emptyTheRoom();

end Event

```

Function or operation	Line	Coverage	Calls
addOrganizer	25	100.0%	2
endEvent	50	100.0%	2
setEndDate	45	100.0%	2
setFashionShow	15	100.0%	2
setName	35	100.0%	2
setOrganizers	20	100.0%	2
setPlace	30	100.0%	2
setStartDate	40	100.0%	2
Event.vdmpp		100.0%	16

3 FashionShow

```

class FashionShow
instance variables
  public name : Utils`string;
  public place : Utils`string;
  public startDate : Utils`date;
  public endDate : Utils`date;
  public capacity : nat1;

-- invariants
inv Utils`isOldestDate(startDate, endDate);

operations
-- constructor

public FashionShow : Utils`string * Utils`string * Utils`date * Utils`date * nat1 ==>
  FashionShow
  FashionShow(n, p, sD, eD, cap) == (
    name := n;
    place := p;
    startDate := sD;
    endDate := eD;
    capacity := cap;
    return self;
  );

-- set name

public setName : Utils`string ==> ()
  setName(n) ==

```

```

    name := n;

-- set place

public setPlace : Utils`string ==> ()
  setPlace(p) ==
    place := p;

-- set start date

public setStartDate : Utils`date ==> ()
  setStartDate(d) ==
    startDate := d;

-- set end date

public setEndDate : Utils`date ==> ()
  setEndDate(d) ==
    endDate := d;

-- set capacity

public setCapacity : nat1 ==> ()
  setCapacity(c) ==
    capacity := c;

end FashionShow

```

Function or operation	Line	Coverage	Calls
FashionShow	14	100.0%	13
setCapacity	45	100.0%	1
setEndDate	40	100.0%	1
setName	25	100.0%	1
setPlace	30	100.0%	1
setStartDate	35	100.0%	1
FashionShow.vdmpp		100.0%	18

4 Notification

```

class Notification
instance variables
  public person:Person;
  public event:Event;
  public startTime:Utils`date;
  public minToNotify:nat;

  inv event.startDate = startTime;

operations
-- constructor

public Notification : Person * Event * nat ==> Notification
  Notification(p,e,m) == (
    person := p;
    event := e;

```

```

    startTime := event.startDate;
    minToNotify := m;
    return self;
)
post event.startDate = startTime;

-- set person

public setPerson : Person ==> ()
setPerson(p) ==
    person := p;

-- set event

public setEvent : Event ==> ()
setEvent(e) == (
    atomic(event := e;
    startTime := e.startDate);
)
post event.startDate = startTime;

-- set minutes to notification

public setMinToNotify : nat ==> ()
setMinToNotify(m) ==
    minToNotify := m;

end Notification

```

Function or operation	Line	Coverage	Calls
Notification	12	100.0%	1
setEvent	28	100.0%	2
setMinToNotify	36	100.0%	1
setPerson	23	100.0%	1
Notification.vdmpp		100.0%	5

5 Person

```

class Person
instance variables
    public name : Utils'string;
    public birthdate : Utils'date;
    public gender : Utils'gender;
    public clothSize : Utils'clothSize;
    public isDesigner : bool;
    public eventsAttending : seq of (Event);
    public ticketToShow : map Ticket to FashionShow;

operations
-- constructor

public Person : Utils'string * Utils'date * Utils'gender * Utils'clothSize * bool ==> Person
Person(n, bD, g, cS, iD) == (
    name := n;
    birthdate := bD;

```

```

    gender := g;
    clothSize := cS;
    isDesigner := iD;
    eventsAttending := [];
    ticketToShow := { |-> };
    return self;
  );

--set name

public setName : Utils'string ==> ()
  setName(n) ==
    name := n;

--set birthdate

public setBirthdate : Utils'date ==> ()
  setBirthdate(bD) ==
    birthdate := bD;

--set gender

public setGender : Utils'gender ==> ()
  setGender(g) ==
    gender := g;

-- set cloth size

public setClothSize : Utils'clothSize ==> ()
  setClothSize(cS) ==
    clothSize := cS;

--set is designer

public setIsDesigner : bool ==> ()
  setIsDesigner(iD) ==
    isDesigner := iD;

--add event to eventsAttending

public addEvent : Event ==> ()
  addEvent(e) ==
    eventsAttending := eventsAttending ^ [e]
    pre not Utils'existsInSeq[Event](e,eventsAttending)
    post eventsAttending = eventsAttending~ ^ [e];

--set ticketToShow

public setTicketToShow : map Ticket to FashionShow ==> ()
  setTicketToShow(e) ==
    ticketToShow := e
    post ticketToShow = e;

--add ticket and show to ticketToShow

public addTicketShow : Ticket * FashionShow ==> ()
  addTicketShow(t,s) ==
    ticketToShow := ticketToShow munion {t |-> s}
    pre not exists tt in set dom ticketToShow & (tt = t or ticketToShow(tt) = s)
    post ticketToShow = ticketToShow~ munion {t |-> s};

end Person

```

Function or operation	Line	Coverage	Calls
Person	14	100.0%	21
addEvent	52	100.0%	2
addTicketShow	65	100.0%	4
setBirthdate	32	100.0%	1
setClothSize	42	100.0%	1
setGender	37	100.0%	1
setIsDesigner	47	100.0%	1
setName	27	100.0%	1
setTicketToShow	59	100.0%	1
Person.vdmpp		100.0%	33

6 PieceOfCloth

```

class PieceOfCloth
types
instance variables
  public creator:Person;
  public size:Utils\'clothSize;
  public clothType:Utils\'clothType;

--invariants
  inv creator.isDesigner;

operations
-- constructor

  public PieceOfCloth : Person * Utils\'clothSize * Utils\'clothType ==> PieceOfCloth
  PieceOfCloth(p,s,t) == (
    creator := p;
    size := s;
    clothType := t;
    return self;
  );

-- set creator

  public setCreator : Person ==> ()
  setCreator(p) ==
    creator := p;

-- set size

  public setSize : Utils\'clothSize ==> ()
  setSize(s) ==
    size := s;

-- set clothType

  public setClothType : Utils\'clothType ==> ()
  setClothType(t) ==
    clothType := t;

end PieceOfCloth

```


Function or operation	Line	Coverage	Calls
PieceOfCloth	13	100.0%	4
setClothType	32	100.0%	1
setCreator	22	100.0%	1
setSize	27	100.0%	1
PieceOfCloth.vdmpp		100.0%	7

7 Presentation

```

class Presentation is subclass of Event
instance variables
  public subject:Utils`string;

operations
-- constructor

  public Presentation : FashionShow * seq1 of Person * Room * Utils`string * Utils`date * Utils`
    date * Utils`string ==> Presentation
Presentation(fS, sP, r, n, sD, eD, s) == (
  fashionShow := fS;
  organizers := sP;
  place := r;
  name := n;
  atomic(startDate := sD;
  endDate := eD;);
  subject := s;
  return self;
);

-- set subject

  public setSubject : Utils`string ==> ()
  setSubject(s) ==
    subject := s;

end Presentation

```

Function or operation	Line	Coverage	Calls
Presentation	7	100.0%	2
setSubject	20	100.0%	1
Presentation.vdmpp		100.0%	3

8 Room

```

class Room
instance variables
  public name : Utils`string;
  public localization : Utils`string;
  public capacity : nat1;
  public occupants : seq of Person;

```

```

-- invariants
inv len occupants <= capacity;

operations
-- constructor

public Room : Utils'string * Utils'string * nat1 ==> Room
Room(n, local, cap) == (
  name := n;
  localization := local;
  capacity := cap;
  occupants := [];
  return self;
);

-- set name

public setName : Utils'string ==> ()
setName(n) ==
  name := n;

-- set localization

public setLocalization : Utils'string ==> ()
setLocalization(l) ==
  localization := l;

-- set capacity

public setCapacity : nat1 ==> ()
setCapacity(c) ==
  capacity := c
  pre c >= len occupants;

-- add a person to the occupants list

public addOccupant : Person ==> ()
addOccupant(p) ==
  occupants := occupants ^ [p]
  pre len occupants < capacity
  post len occupants <= capacity and
    occupants = occupants~ ^ [p];

-- make the room empty

public emptyTheRoom : () ==> ()
emptyTheRoom() ==
  occupants := []
  post occupants = [];

end Room

```

Function or operation	Line	Coverage	Calls
Room	13	100.0%	9
addOccupant	39	100.0%	3
emptyTheRoom	47	100.0%	3
setCapacity	33	100.0%	1
setLocalization	28	100.0%	1

setName	23	100.0%	1
Room.vdmpp		100.0%	18

9 RunwayShow

```

class RunwayShow is subclass of Event
instance variables
    public theme:Utils`string;

operations
-- constructor

    public RunwayShow : FashionShow * seq1 of Person * Room * Utils`string * Utils`date * Utils`date
        * Utils`string ==> RunwayShow
    RunwayShow(fS, sP, r, n, sD, eD, t) == (
        fashionShow := fS;
        organizers := sP;
        place := r;
        name := n;
        atomic(startDate := sD;
        endDate := eD);
        theme := t;
        return self;
    );

-- set name

    public setTheme : Utils`string ==> ()
    setTheme(t) ==
        theme := t;

end RunwayShow

```

Function or operation	Line	Coverage	Calls
RunwayShow	7	100.0%	6
setTheme	20	100.0%	1
RunwayShow.vdmpp		100.0%	7

10 Ticket

```

class Ticket
instance variables
    public holder : Person;
    public show : FashionShow;
    public startDate : Utils`date;
    public endDate : Utils`date;
    public type : Utils`ticketType;

-- invariants
inv Utils`isOldestDate(startDate, endDate);
inv Utils`isOldestDate(show.startDate, startDate) or show.startDate = startDate;
inv Utils`isOldestDate(endDate, show.endDate) or endDate = show.endDate;

```

```

inv if type = <Designer> then holder.isDesigner else true;

operations
-- constructor

public Ticket : Person * FashionShow * Utils'date * Utils'date * Utils'ticketType ==> Ticket
Ticket(p, s, sD, eD, t) == (
  holder := p;
  atomic(show := s;
    startDate := sD;
    endDate := eD);
  type := t;
  p.addTicketShow(self,s);
  return self;
);

-- set ticket holder

public setHolder : Person ==> ()
setHolder(p) ==
  holder := p;

--set fashion show

public setShow : FashionShow ==> ()
setShow(s) ==
  show := s;

-- set start date

public setStartDate : Utils'date ==> ()
setStartDate(d) ==
  startDate := d;

-- set end date

public setEndDate : Utils'date ==> ()
setEndDate(d) ==
  endDate := d;

-- set ticket type

public setType : Utils'ticketType ==> ()
setType(t) ==
  type := t;

end Ticket

```

Function or operation	Line	Coverage	Calls
Ticket	17	100.0%	3
setEndDate	44	100.0%	1
setHolder	29	100.0%	1
setShow	34	100.0%	1
setStartDate	39	100.0%	1
setType	49	100.0%	1
Ticket.vdmpp		100.0%	8

11 Utils

```

class Utils
types
  public string = seq of char;
  public date :: year : nat
              month: nat1
              day : nat1
              hour : nat
              minute : nat
  inv d == d.month <= 12 and
        d.day <= DaysOfMonth(d.year, d.month) and
        d.hour <= 23 and
        d.minute <= 59;
  public gender = <Male> | <Female>;
  public clothSize = <XL> | <L> | <M> | <S> | <XS>;
  public clothType = <Shirt> | <Jacket> | <Pants> | <Shoes> | <Hat>;
  public ticketType = <Designer> | <Worker> | <Volunteer> | <Guest> | <Sponsor> | <Attendee>;
values
  -- TODO Define values here
instance variables
  -- TODO Define instance variables here
operations
  -- TODO Define operations here

  public static assertTrue: bool ==> ()
    assertTrue(cond) == return
    pre cond;

functions
  -- TODO Define functions here

public static existsInSeq[@T](e:@T, s: seq of @T) res: bool ==
  exists t in set elems s & t = e;

-- function that returns the number of days in a month

public DaysOfMonth(year:nat,month:nat1) res:nat1 ==
  if month in set {1,3,5,7,8,10,12} then 31
  elseif month in set {4,6,9,11} then 30
  elseif IsLeapYear(year) and month = 2 then 29
  else 28;

-- function that says if a given year is a leap year or not

public static IsLeapYear(year: nat1) res : bool ==
  year mod 4 = 0 and year mod 100 <> 0 or
  year mod 400 = 0;

-- checks if d1 is older than d2

public static isOldestDate(d1:date, d2:date) res : bool ==
  if d1.year <> d2.year then d1.year < d2.year
  else if d1.month <> d2.month then d1.month < d2.month
  else if d1.day <> d2.day then d1.day < d2.day
  else if d1.hour <> d2.hour then d1.hour < d2.hour
  else if d1.minute <> d2.minute then d1.minute < d2.minute
  else false;

-- checks if pair (sd1, ed1) is coincident with (sd2, ed2) are coincident

```

```

public static coincDate(sd1:date, ed1:date, sd2:date, ed2:date) res : bool ==
  if isOldestDate(ed1,sd2) or ed1 = sd2 or isOldestDate(ed2,sd1) or ed2 = sd1 then false
  else true;

```

traces

-- TODO Define Combinatorial Test Traces here

end Utils

Function or operation	Line	Coverage	Calls
DaysOfMonth	35	100.0%	1
IsLeapYear	42	100.0%	36
assertTrue	24	100.0%	258
coincDate	56	100.0%	4
existsInSeq	31	100.0%	7
isOldestDate	47	100.0%	77
Utils.vdmpp		100.0%	383

12 ClothDisplayedTest

```

class ClothDisplayedTest
types
  -- TODO Define types here
values
  -- TODO Define values here
instance variables
  -- TODO Define instance variables here
  pTest1:Person := new Person("Test Person1", mk_Utils`date(1996,12,15,16,00), <Female>, <S>,
    false);
  pTest2:Person := new Person("Test Person2", mk_Utils`date(1996,12,15,16,00), <Male>, <L>, true);
  pTest3:Person := new Person("Test Person3", mk_Utils`date(1994,10,15,16,00), <Female>, <S>,
    false);
  cTest1:PieceOfCloth := new PieceOfCloth(pTest2,<S>,<Shirt>);
  cTest2:PieceOfCloth := new PieceOfCloth(pTest2,<S>,<Pants>);
  rTest1:Room := new Room("Salal","Edificio A, Piso 2",50);
  fasTest1:FashionShow := new FashionShow("1234Show", "MEO Arena", mk_Utils`date(2017,12,15,8,00)
    , mk_Utils`date(2017,12,20,00,30), 500);
  fasTest2:FashionShow := new FashionShow("5678Show", "MEO Arena", mk_Utils`date(2017,12,15,8,00)
    , mk_Utils`date(2017,12,20,00,30), 200);
  runTest1:RunwayShow := new RunwayShow(fasTest1, [pTest2],rTest1, "NameTest", mk_Utils`date
    (2017,12,15,16,00), mk_Utils`date(2017,12,15,17,30), "testTheme");
  runTest2:RunwayShow := new RunwayShow(fasTest1, [pTest2],rTest1, "NameTest", mk_Utils`date
    (2017,12,15,16,00), mk_Utils`date(2017,12,15,17,30), "testTheme");
  cDTest1:ClothDisplayed := new ClothDisplayed(pTest1,cTest1,runTest1);

operations

  private testClothDisplayed : () ==> ()
  testClothDisplayed() == (
    --test constructor
    Utils`assertTrue(cDTest1.model = pTest1);
    Utils`assertTrue(cDTest1.cloth = cTest1);
    Utils`assertTrue(cDTest1.runway = runTest1);

    --test setModel

```

```

    cDTest1.setModel(pTest3);
    Utils'assertTrue(cDTest1.model = pTest3);

    --test setCloth
    cDTest1.setCloth(cTest2);
    Utils'assertTrue(cDTest1.cloth = cTest2);

    --test setCloth
    cDTest1.setRunwayShow(runTest2);
    Utils'assertTrue(cDTest1.runway = runTest2);
);

public static main: () ==> ()
  main() == (
    new ClothDisplayedTest().testClothDisplayed();
  );
functions
-- TODO Define functiones here
traces
-- TODO Define Combinatorial Test Traces here
end ClothDisplayedTest

```

Function or operation	Line	Coverage	Calls
main	41	100.0%	1
testClothDisplayed	21	100.0%	1
ClothDisplayedTest.vdmpp		100.0%	2

13 FashionShowTest

```

class FashionShowTest
types
-- TODO Define types here
values
-- TODO Define values here
instance variables
-- TODO Define instance variables here
perTest1:Person := new Person("Test Person1", mk_Utils'date
  (1996,12,15,16,00), <Male>, <L>, false);
fasTest1:FashionShow := new FashionShow("1234Show", "MEO Arena", mk_Utils'date(2017,12,15,8,00)
  , mk_Utils'date(2017,12,20,00,30), 500);

operations

private testFashionShow : () ==> ()
  testFashionShow() == (
    --test contructor
    Utils'assertTrue(fasTest1.name = "1234Show");
    Utils'assertTrue(fasTest1.place = "MEO Arena");
    Utils'assertTrue(fasTest1.startDate = mk_Utils'date(2017,12,15,8,00));
    Utils'assertTrue(fasTest1.endDate = mk_Utils'date(2017,12,20,00,30));
    Utils'assertTrue(fasTest1.capacity = 500);

    fasTest1.setName("5678Show");
    Utils'assertTrue(fasTest1.name = "5678Show");
  )

```

```

    fasTest1.setPlace("5678 Street");
    Utils`assertTrue(fasTest1.place = "5678 Street");

    fasTest1.setStartDate(mk_Utils`date(2017,12,15,7,00));
    Utils`assertTrue(fasTest1.startDate = mk_Utils`date(2017,12,15,7,00));

    fasTest1.setEndDate(mk_Utils`date(2017,12,20,01,00));
    Utils`assertTrue(fasTest1.endDate = mk_Utils`date(2017,12,20,01,00));

    fasTest1.setCapacity(300);
    Utils`assertTrue(fasTest1.capacity = 300);
);

public static main: () ==> ()
  main() == (
    new FashionShowTest().testFashionShow();
  );
functions
-- TODO Define functiones here
traces
-- TODO Define Combinatorial Test Traces here
end FashionShowTest

```

Function or operation	Line	Coverage	Calls
main	37	100.0%	1
testFashionShow	12	100.0%	1
FashionShowTest.vdmpp		100.0%	2

14 NotificationTest

```

class NotificationTest
types
-- TODO Define types here
values
-- TODO Define values here
instance variables
-- TODO Define instance variables here
perTest1:Person := new Person("Test Person1", mk_Utils`date(1996,12,15,16,00), <Male>, <L>,
  false);
perTest2:Person := new Person("Test Person2", mk_Utils`date(1991,12,15,16,00), <Female>, <S>,
  false);
perTest3:Person := new Person("Test Person3", mk_Utils`date(1986,12,15,16,00), <Male>, <XL>,
  true);
orgTest1: seq of (Person) := [perTest1, perTest2, perTest3];
roomTest1:Room := new Room("Salal","Edificio A, Piso 2",50);
fasTest1:FashionShow := new FashionShow("1234Show", "MEO Arena", mk_Utils`date(2017,12,15,8,00)
  , mk_Utils`date(2017,12,20,00,30), 500);
fasTest2:FashionShow := new FashionShow("5678Show", "MEO Arena", mk_Utils`date(2017,12,15,8,00)
  , mk_Utils`date(2017,12,20,00,30), 200);
rTest1:RunwayShow := new RunwayShow(fasTest1, [perTest1],roomTest1, "NameTest", mk_Utils`date
  (2017,12,15,16,00), mk_Utils`date(2017,12,15,17,30), "testTheme");
rTest2:RunwayShow := new RunwayShow(fasTest1, [perTest1],roomTest1, "NameTest", mk_Utils`date
  (2017,12,15,8,00), mk_Utils`date(2017,12,15,17,30), "testTheme");
nTest:Notification := new Notification(perTest1,rTest1,15);

```



```

operations
--test constructor

private testNotification : () ==> ()
testNotification() == (
--test constructor
  Utils`assertTrue(nTest.person = perTest1);
  Utils`assertTrue(nTest.event = rTest1);
  Utils`assertTrue(nTest.startTime = mk_Utils`date(2017,12,15,16,00));
  Utils`assertTrue(nTest.minToNotify = 15);

--test setPerson()
  nTest.setPerson(perTest2);
  Utils`assertTrue(nTest.person = perTest2);

--test setEvent()
  nTest.setEvent(rTest2);
  Utils`assertTrue(nTest.event = rTest2);
  Utils`assertTrue(nTest.startTime = mk_Utils`date(2017,12,15,8,00));

--test setMinToNotify()
  nTest.setMinToNotify(20);
  Utils`assertTrue(nTest.minToNotify = 20);

);

public static main: () ==> ()
main() == (
  new NotificationTest().testNotification();
);
functions
-- TODO Define functiones here
traces
-- TODO Define Combinatorial Test Traces here
end NotificationTest

```

Function or operation	Line	Coverage	Calls
main	46	100.0%	1
testNotification	22	100.0%	1
NotificationTest.vdmpp		100.0%	2

15 PersonTest

```

class PersonTest
types
-- TODO Define types here
values
instance variables
pTest :Person := new Person("Test Person", mk_Utils`date(1996,12,15,16,00), <Male>, <L>, false);
pTest1:Person := new Person("Test Person1", mk_Utils`date(1996,12,15,16,00), <Male>, <L>, false)
;
rTest1:Room := new Room("Sala1", "Edificio A, Piso 2",50);
rTest2:Room := new Room("Sala2", "Edificio B, Piso 3",5);

```

```

orgTest: seq of (Person) := [pTest1];
fasTest1:FashionShow := new FashionShow("1234Show", "MEO Arena", mk_Utils`date(2017,12,15,8,00)
, mk_Utils`date(2017,12,20,00,30), 500);
fasTest2:FashionShow := new FashionShow("5678Show", "MEO Arena", mk_Utils`date(2017,12,15,8,00)
, mk_Utils`date(2017,12,20,00,30), 200);
preTest:Presentation := new Presentation(fasTest1,orgTest,rTest1, "NameTest", mk_Utils`date
(2017,12,15,16,00), mk_Utils`date(2017,12,15,17,30), "testSubject");
runTest:RunwayShow := new RunwayShow(fasTest1,orgTest,rTest2, "PreTest", mk_Utils`date
(2017,12,15,18,00), mk_Utils`date(2017,12,15,19,30), "testTheme");
ticket1:Ticket := new Ticket(pTest, fasTest1, mk_Utils`date(2017,12,15,8,00), mk_Utils`date
(2017,12,20,00,30), <Worker>);
ticket2:Ticket := new Ticket(pTest, fasTest2, mk_Utils`date(2017,12,15,8,00), mk_Utils`date
(2017,12,20,00,30), <Worker>);

```

operations

-- TODO Define operations here

```

private testPerson : () ==> ()
testPerson() == (
--test constructor
  Utils`assertTrue(pTest.name = "Test Person");
  Utils`assertTrue(pTest.birthdate = mk_Utils`date(1996,12,15,16,00));
  Utils`assertTrue(pTest.gender = <Male>);
  Utils`assertTrue(pTest.clothSize = <L>);
  Utils`assertTrue(pTest.isDesigner = false);

--test setName()
  pTest.setName("Test Person2");
  Utils`assertTrue(pTest.name = "Test Person2");

--test setBirthdate()
  pTest.setBirthdate(mk_Utils`date(1995,12,15,16,00));
  Utils`assertTrue(pTest.birthdate = mk_Utils`date(1995,12,15,16,00));

--test setGender()
  pTest.setGender(<Female>);
  Utils`assertTrue(pTest.gender = <Female>);

--test setClothsize()
  pTest.setClothSize(<XS>);
  Utils`assertTrue(pTest.clothSize = <XS>);

--test addEvent()
  pTest.addEvent(preTest);
  pTest.addEvent(runTest);
  Utils`assertTrue(pTest.eventsAttending = [preTest, runTest]);
  Utils`assertTrue(len pTest.eventsAttending = 2);

--test setIsDesigner
  pTest.setIsDesigner(true);
  Utils`assertTrue(pTest.isDesigner = true);

--test setTicketToShow
  pTest.setTicketToShow({ticket1 |-> fasTest1});
  Utils`assertTrue(pTest.ticketToShow = {ticket1 |-> fasTest1});

--test addTicketShow()
  pTest.addTicketShow(ticket2, fasTest2);
  Utils`assertTrue(pTest.ticketToShow = {ticket1 |-> fasTest1, ticket2 |-> fasTest2});

  --pTest.addTicketShow(ticket1, fasTest1);
);

```

```

public static main: () ==> ()

```

```

    main() == (
        new PersonTest().testPerson();
    );
functions
-- TODO Define functiones here
traces
-- TODO Define Combinatorial Test Traces here
end PersonTest

```

Function or operation	Line	Coverage	Calls
main	66	100.0%	2
testPerson	20	100.0%	1
PersonTest.vdmpp		100.0%	3

16 PieceOfClothTest

```

class PieceOfClothTest
types
-- TODO Define types here
values
-- TODO Define values here
instance variables
pTest1:Person := new Person("Test Person1", mk_Utils`date(1996,12,15,16,00), <Female>, <S>, true
    );
pTest2:Person := new Person("Test Person2", mk_Utils`date(1996,12,15,16,00), <Male>, <L>, true);
pTest3:Person := new Person("Test Person3", mk_Utils`date(1994,10,15,16,00), <Female>, <S>,
    false);
cTest1:PieceOfCloth := new PieceOfCloth(pTest1,<S>,<Shirt>);
cTest2:PieceOfCloth := new PieceOfCloth(pTest2,<S>,<Pants>);
operations
-- TODO Define operations here

private testPieceOfCloth : () ==> ()
testPieceOfCloth() == (
    --test contructor
    Utils`assertTrue(cTest1.creator = pTest1);
    Utils`assertTrue(cTest1.size = <S>);
    Utils`assertTrue(cTest1.clothType = <Shirt>);

    --test setCreator
    cTest1.setCreator(pTest2);
    Utils`assertTrue(cTest1.creator = pTest2);

    --test setClothSize
    cTest1.setSize(<M>);
    Utils`assertTrue(cTest1.size = <M>);

    --test setClothType
    cTest1.setClothType(<Pants>);
    Utils`assertTrue(cTest1.clothType = <Pants>);
);

public static main: () ==> ()
main() == (
    new PieceOfClothTest().testPieceOfCloth();

```

```

);
functions
-- TODO Define functiones here
traces
-- TODO Define Combinatorial Test Traces here
end PieceOfClothTest

```

Function or operation	Line	Coverage	Calls
main	34	100.0%	2
testPieceOfCloth	14	100.0%	1
PieceOfClothTest.vdmpp		100.0%	3

17 PresentationTest

```

class PresentationTest
types
-- TODO Define types here
values
-- TODO Define values here
instance variables
perTest1:Person := new Person("Test Person1", mk_Utills`date(1996,12,15,16,00), <Male>, <L>,
    false);
perTest2:Person := new Person("Test Person2", mk_Utills`date(1991,12,15,16,00), <Female>, <S>,
    false);
perTest3:Person := new Person("Test Person3", mk_Utills`date(1986,12,15,16,00), <Male>, <XL>,
    true);
orgTest1:seq of (Person) := [perTest1, perTest2, perTest3];
rTest1:Room := new Room("Salal", "Edificio A, Piso 2", 50);
rTest2:Room := new Room("Sala2", "Edificio B, Piso 3", 5);
fasTest1:FashionShow := new FashionShow("1234Show", "MEO Arena", mk_Utills`date(2017,12,15,8,00)
    , mk_Utills`date(2017,12,20,00,30), 500);
fasTest2:FashionShow := new FashionShow("5678Show", "MEO Arena", mk_Utills`date(2017,12,15,8,00)
    , mk_Utills`date(2017,12,20,00,30), 200);
pTest:Presentation := new Presentation(fasTest1, [perTest1], rTest1, "NameTest", mk_Utills`date
    (2017,12,15,16,00), mk_Utills`date(2017,12,15,17,30), "testSubject");
operations

private testPresentation : () ==> ()
testPresentation() == (
--test constructor
    Utills`assertTrue(pTest.organizers = [perTest1]);
    Utills`assertTrue(pTest.place = rTest1);
    Utills`assertTrue(pTest.name = "NameTest");
    Utills`assertTrue(pTest.startDate = mk_Utills`date(2017,12,15,16,00));
    Utills`assertTrue(pTest.endDate = mk_Utills`date(2017,12,15,17,30));
    Utills`assertTrue(pTest.subject = "testSubject");

--test setFashionShow()
    pTest.setFashionShow(fasTest2);
    Utills`assertTrue(pTest.fashionShow = fasTest2);

--test setPlace()
    pTest.setPlace(rTest2);
    Utills`assertTrue(pTest.place = rTest2);

--test setName()

```

```

    pTest.setName("nameTest1");
    Utils`assertTrue(pTest.name = "nameTest1");

--test setStartDate()
    pTest.setStartDate(mk_Utils`date(2017,12,14,16,00));
    Utils`assertTrue(pTest.startDate = mk_Utils`date(2017,12,14,16,00));

--test setEndDate()
    pTest.setEndDate(mk_Utils`date(2017,12,14,17,00));
    Utils`assertTrue(pTest.endDate = mk_Utils`date(2017,12,14,17,00));

--test addOrganizer()
    --pTest.addOrganizer(perTest1);
    pTest.addOrganizer(perTest2);
    Utils`assertTrue(pTest.organizers = [perTest1, perTest2]);

--test setOrganizers()
    pTest.setOrganizers(orgTest1);
    Utils`assertTrue(pTest.organizers = [perTest1, perTest2, perTest3]);

--test endEvent()
    pTest.place.addOccupant(perTest1);
    pTest.endEvent();
    Utils`assertTrue(pTest.place.occupants = []);

--test setSubject()
    pTest.setSubject("testSubject1");
    Utils`assertTrue(pTest.subject = "testSubject1");
);

public static main: () ==> ()
    main() == (
        new PresentationTest().testPresentation();
    );
functions
-- TODO Define functiones here
traces
-- TODO Define Combinatorial Test Traces here
end PresentationTest

```

Function or operation	Line	Coverage	Calls
main	66	100.0%	1
testPresentation	17	100.0%	1
PresentationTest.vdmpp		100.0%	2

18 RoomTest

```

class RoomTest
types
-- TODO Define types here
values
-- TODO Define values here
instance variables
    pTest : Person := new Person("TestPerson", mk_Utils`date(1996,12,15,16,00), <Male>, <L>, false);
    rTest:Room := new Room("Salal", "Edificio A, Piso 2", 50);

```

operations

```
private testRoom : () ==> ()
testRoom() == (
  Utils`assertTrue(rTest.name = "Salal");
  Utils`assertTrue(rTest.localization = "Edificio A, Piso 2");
  Utils`assertTrue(rTest.capacity = 50);
  rTest.setName("Salal1");
  Utils`assertTrue(rTest.name = "Salal1");
  rTest.setLocalization("Edificio B, Piso 1");
  Utils`assertTrue(rTest.localization = "Edificio B, Piso 1");
  rTest.setCapacity(5);
  Utils`assertTrue(rTest.capacity = 5);
  rTest.addOccupant(pTest);
  Utils`assertTrue(len rTest.occupants = 1);
  Utils`assertTrue(rTest.occupants = [pTest]);
  rTest.emptyTheRoom();
  Utils`assertTrue(rTest.occupants = []);
);

public static main: () ==> ()
main() == (
  new RoomTest().testRoom();
);
functions
-- TODO Define functiones here
traces
-- TODO Define Combinatorial Test Traces here
end RoomTest
```

Function or operation	Line	Coverage	Calls
main	28	100.0%	2
testRoom	10	100.0%	1
RoomTest.vdmpp		100.0%	3

19 RunwayShowTest

```
class RunwayShowTest
types
-- TODO Define types here
values
-- TODO Define values here
instance variables
perTest1:Person := new Person("Test Person1", mk_Utils`date(1996,12,15,16,00), <Male>, <L>,
  false);
perTest2:Person := new Person("Test Person2", mk_Utils`date(1991,12,15,16,00), <Female>, <S>,
  false);
perTest3:Person := new Person("Test Person3", mk_Utils`date(1986,12,15,16,00), <Male>, <XL>,
  true);
orgTest1: seq of (Person) := [perTest1, perTest2, perTest3];
rTest1:Room := new Room("Salal","Edificio A, Piso 2",50);
rTest2:Room := new Room("Sala2","Edificio B, Piso 3",5);
fasTest1:FashionShow := new FashionShow("1234Show", "MEO Arena", mk_Utils`date(2017,12,15,8,00)
  , mk_Utils`date(2017,12,20,00,30), 500);
```

```

fasTest2:FashionShow := new FashionShow("5678Show", "MEO Arena", mk_Utils`date(2017,12,15,8,00)
, mk_Utils`date(2017,12,20,00,30), 200);
rTest:RunwayShow := new RunwayShow(fasTest1, [perTest1],rTest1, "NameTest", mk_Utils`date
(2017,12,15,16,00), mk_Utils`date(2017,12,15,17,30), "testTheme");

operations

private testRunwayShow : () ==> ()
testRunwayShow() == (
--test constructor
Utils`assertTrue(rTest.organizers = [perTest1]);
Utils`assertTrue(rTest.place = rTest1);
Utils`assertTrue(rTest.name = "NameTest");
Utils`assertTrue(rTest.startDate = mk_Utils`date(2017,12,15,16,00));
Utils`assertTrue(rTest.endDate = mk_Utils`date(2017,12,15,17,30));
Utils`assertTrue(rTest.theme = "testTheme");

--test setFashionShow()
rTest.setFashionShow(fasTest2);
Utils`assertTrue(rTest.fashionShow = fasTest2);

--test setPlace()
rTest.setPlace(rTest2);
Utils`assertTrue(rTest.place = rTest2);

--test setName()
rTest.setName("nameTest1");
Utils`assertTrue(rTest.name = "nameTest1");

--test setStartDate()
rTest.setStartDate(mk_Utils`date(2017,12,14,16,00));
Utils`assertTrue(rTest.startDate = mk_Utils`date(2017,12,14,16,00));

--test setEndDate()
rTest.setEndDate(mk_Utils`date(2017,12,14,17,00));
Utils`assertTrue(rTest.endDate = mk_Utils`date(2017,12,14,17,00));

--test addOrganizer()
--rTest.addOrganizer(perTest1);
rTest.addOrganizer(perTest2);
Utils`assertTrue(rTest.organizers = [perTest1, perTest2]);

--test setOrganizers()
rTest.setOrganizers(orgTest1);
Utils`assertTrue(rTest.organizers = [perTest1, perTest2, perTest3]);

--test endEvent()
rTest.place.addOccupant(perTest1);
rTest.endEvent();
Utils`assertTrue(rTest.place.occupants = []);

--test setTheme()
rTest.setTheme("testThemel");
Utils`assertTrue(rTest.theme = "testThemel");
);

public static main: () ==> ()
main() == (
new RunwayShowTest().testRunwayShow();
);functions
-- TODO Define functiones here
traces
-- TODO Define Combinatorial Test Traces here
end RunwayShowTest

```

Function or operation	Line	Coverage	Calls
main	67	100.0%	1
testRunwayShow	18	100.0%	1
RunwayShowTest.vdmpp		100.0%	2

20 Tests

```

class Tests
types
-- TODO Define types here
values
-- TODO Define values here
instance variables
-- TODO Define instance variables here
operations

public static main: () ==> ()
main() == (
RoomTest `main();
UtilsTest `main();
PresentationTest `main();
PersonTest `main();
NotificationTest `main();
RunwayShowTest `main();
PieceOfClothTest `main();
FashionShowTest `main();
ClothDisplayedTest `main();
TicketTest `main();
);
functions
-- TODO Define functiones here
traces
-- TODO Define Combinatorial Test Traces here
end Tests

```

Function or operation	Line	Coverage	Calls
main	9	100.0%	1
Tests.vdmpp		100.0%	1

21 TicketTest

```

class TicketTest
types
-- TODO Define types here
values
-- TODO Define values here

```



```

instance variables
pTest1:Person := new Person("Test Person1", mk_Utils`date(1996,12,15,16,00), <Female>, <S>,
    false);
pTest2:Person := new Person("Test Person2", mk_Utils`date(1996,12,15,16,00), <Male>, <L>, true);
pTest3:Person := new Person("Test Person3", mk_Utils`date(1994,10,15,16,00), <Female>, <S>,
    false);
fasTest1:FashionShow := new FashionShow("1234Show", "MEO Arena", mk_Utils`date(2014,12,15,8,00)
    , mk_Utils`date(2017,12,20,00,30), 500);
fasTest2:FashionShow := new FashionShow("5678Show", "MEO Arena", mk_Utils`date(2014,12,15,8,00)
    , mk_Utils`date(2017,12,20,00,30), 200);
tTest:Ticket := new Ticket(pTest1,fasTest1,mk_Utils`date(2016,10,15,16,00),mk_Utils`date
    (2016,10,15,16,30),<Guest>);
operations
-- TODO Define operations here

private testTicket : () ==> ()
testTicket() == (
    --test constructor
    Utils`assertTrue(tTest.holder = pTest1);
    Utils`assertTrue(tTest.show = fasTest1);
    Utils`assertTrue(tTest.startDate = mk_Utils`date(2016,10,15,16,00));
    Utils`assertTrue(tTest.endDate = mk_Utils`date(2016,10,15,16,30));
    Utils`assertTrue(tTest.type = <Guest>);

    --test setHolder()
    tTest.setHolder(pTest2);
    Utils`assertTrue(tTest.holder = pTest2);

    --test setFashionShow()
    tTest.setShow(fasTest2);
    Utils`assertTrue(tTest.show = fasTest2);

    --test setStartDate()
    tTest.setStartDate(mk_Utils`date(2016,10,14,16,00));
    Utils`assertTrue(tTest.startDate = mk_Utils`date(2016,10,14,16,00));

    --test setEndDate()
    tTest.setEndDate(mk_Utils`date(2016,10,14,16,30));
    Utils`assertTrue(tTest.endDate = mk_Utils`date(2016,10,14,16,30));

    --test setTicketType()
    tTest.setType(<Designer>);
    Utils`assertTrue(tTest.type = <Designer>);
);

public static main: () ==> ()
main() == (
    new TicketTest().testTicket();
);

functions
-- TODO Define functiones here
traces
-- TODO Define Combinatorial Test Traces here
end TicketTest

```

Function or operation	Line	Coverage	Calls
main	45	100.0%	2
testTicket	15	100.0%	1

22 UtilsTest

```

class UtilsTest
types
-- TODO Define types here
values
-- TODO Define values here
instance variables
str : Utils\string;
dat : Utils\date;
gen : Utils\string;
cSize : Utils\string;
cType : Utils\string;
tType : Utils\string;
testSeq : seq of nat := [1,2,3,4,5];
operations

public testString : () ==> ()
testString() == (
  str := "Teste";
  Utils\assertTrue(str = "Teste");
);

public testDate : () ==> ()
testDate() == (
  str := "Teste";
  Utils\assertTrue(str = "Teste");
  dat := mk_Utils\date(2017,12,29,17,15);
  Utils\assertTrue(dat.year = 2017);
  Utils\assertTrue(dat.month = 12);
  Utils\assertTrue(dat.day = 29);
  Utils\assertTrue(dat.hour = 17);
  Utils\assertTrue(dat.minute = 15);

  dat := mk_Utils\date(2017,11,29,17,15);
  Utils\assertTrue(dat.year = 2017);
  Utils\assertTrue(dat.month = 11);
  Utils\assertTrue(dat.day = 29);
  Utils\assertTrue(dat.hour = 17);
  Utils\assertTrue(dat.minute = 15);

  dat := mk_Utils\date(2016,2,29,17,15);
  Utils\assertTrue(dat.year = 2016);
  Utils\assertTrue(dat.month = 2);
  Utils\assertTrue(dat.day = 29);
  Utils\assertTrue(dat.hour = 17);
  Utils\assertTrue(dat.minute = 15);

  dat := mk_Utils\date(2015,2,28,17,15);
  Utils\assertTrue(dat.year = 2015);
  Utils\assertTrue(dat.month = 2);
  Utils\assertTrue(dat.day = 28);
  Utils\assertTrue(dat.hour = 17);
  Utils\assertTrue(dat.minute = 15);

  Utils\assertTrue(not Utils\isOldestDate(mk_Utils\date(2015,2,28,17,15),mk_Utils\date
    (2015,2,28,17,15)));

```

```

Utils`assertTrue(Utils`isOldestDate(mk_Utils`date(2014,2,28,17,15),mk_Utils`date
(2015,2,28,17,15)));
Utils`assertTrue(Utils`isOldestDate(mk_Utils`date(2015,1,28,17,15),mk_Utils`date
(2015,2,28,17,15)));
Utils`assertTrue(Utils`isOldestDate(mk_Utils`date(2015,2,27,17,15),mk_Utils`date
(2015,2,28,17,15)));
Utils`assertTrue(Utils`isOldestDate(mk_Utils`date(2015,2,28,16,15),mk_Utils`date
(2015,2,28,17,15)));
Utils`assertTrue(Utils`isOldestDate(mk_Utils`date(2015,2,28,17,14),mk_Utils`date
(2015,2,28,17,15)));

Utils`assertTrue(Utils`coincDate(mk_Utils`date(2015,2,28,17,14),mk_Utils`date(2015,2,28,17,15)
,mk_Utils`date(2015,2,28,17,14),mk_Utils`date(2015,2,28,17,15)));
Utils`assertTrue(not Utils`coincDate(mk_Utils`date(2015,2,28,17,14),mk_Utils`date
(2015,2,28,17,15),mk_Utils`date(2015,2,28,17,15),mk_Utils`date(2015,2,28,17,17)));
Utils`assertTrue(not Utils`coincDate(mk_Utils`date(2015,2,28,17,14),mk_Utils`date
(2015,2,28,17,15),mk_Utils`date(2015,2,28,17,16),mk_Utils`date(2015,2,28,17,17)));

Utils`assertTrue(Utils`coincDate(mk_Utils`date(2015,2,28,17,14),mk_Utils`date(2015,2,28,17,15)
,mk_Utils`date(2015,2,28,17,14),mk_Utils`date(2015,2,28,17,15)));
Utils`assertTrue(not Utils`coincDate(mk_Utils`date(2015,2,28,17,15),mk_Utils`date
(2015,2,28,17,17),mk_Utils`date(2015,2,28,17,14),mk_Utils`date(2015,2,28,17,15)));
Utils`assertTrue(not Utils`coincDate(mk_Utils`date(2015,2,28,17,16),mk_Utils`date
(2015,2,28,17,17),mk_Utils`date(2015,2,28,17,14),mk_Utils`date(2015,2,28,17,15)));

);

public testExistInSeq : () ==> ()
testExistInSeq() == (
  Utils`assertTrue(Utils`existsInSeq[nat](1,testSeq) = true);
  Utils`assertTrue(Utils`existsInSeq[nat](10,testSeq) = false);
);

public static main: () ==> ()
main() == (
  new UtilsTest().testString();
  new UtilsTest().testDate();
  new UtilsTest().testExistInSeq();
);

functions
-- TODO Define functiones here
traces
-- TODO Define Combinatorial Test Traces here
end UtilsTest

```

Function or operation	Line	Coverage	Calls
main	75	100.0%	2
testDate	21	100.0%	1
testExistInSeq	70	100.0%	1
testString	15	100.0%	1
UtilsTest.vdmpp		100.0%	5