Contextualized activity 1

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1.-

Use of Lokomat

- Measure the patient's thig segement;
- Get the waistcoat;
- If the waistcoat is alligned with user's spire, then wear. Else, align it and wear them;
- Raise the patient on the platform;
- Lift the patient;
- Insert the patient in Lokomat's exoskeleton;
- Align the hip on exoskeleton;
- Align the legs on exoskeleton;
- Initialize the Lokomat;
- Set the time and speed of the walk;
- While the time does not equal the 0, the patient walk;
- Show the process to the patient;
- If the time is equal 0 then, turn off the Lokomat;
- Decouple the exoskeleton;
- Put the patient on the wheelchair;
- Get the patient off the platform;
- Get off the patient's waistcoat.

Use of ZeroG

- Wear the waistcoat;
- Lower the support cable to the height of the user's head;
- If the waistcoat is dressed and the support cable is fitted, then lift the patient, Else, wear the waistcoat and fitted the support cable.
- If the speed was adjusted the patient start walk, else, adjust them and next start walk.
- Repeat movement of ZeroG, while the user walk.
- If the person is unbalanced, the lift it;
- If the session time is over, then get patient off the ZeroG;
- Get off the waistcoat.

2.- Lokomat

Memory:

Segment Size (Real), AlignmentWaistcoat (Boolean), DressedWaistcoat (Boolean), InsertedCorrectExoskeleton (Boolean), AlignmentHip (Boolean), AlignmentLegs (Boolean), LokomatInitialized (Boolean), time (integer), Speed (Real), OnWheelchair (Boolean), InPlatform (Boolean), RaisedPatient (Boolean)

Processing:

MeasureSegment, AlignWaistcoat, GetWaistcoat, RaisePlatform, LeavePlatform, LiftPatient, InsertExoskeleton, AlignHip, AlignLegs, StartLokomat, SetTime, SetSpeed, StartWalk, ShowProcess, DecoupleExoskeleton, PutWheelchair, GetOffWaistcoat, WearWaistcoat;

Input:

Keyboard, Remote control, mouse, waistcoat's sensor.

Output:

Computer monitor, Led

ZeroG

Memory:

DressedWaistcoat (Boolean), FittedSupportCable (Boolean), RaisedPatient (Boolean),

Speed Real), User walk (Boolean), Person-Unbalanced (Boolean), SessionTime (Integer) inZeroG (Boolean); SetSpeed (Boolean);

Processing:

WearWaistcoat, PutSupportCable, LiftPatient, SetSpeed, PatientWalk, ZeroGMove, SetSessionTime, AnalyzeSessionTime, GetOffZeroG, GetOffWaistcoat, PutZeroG.

Input:

Keyboard, mouse.

Output:

computer monitor, LED.

3.

Structure of decision: Lokomat

- If the waistcoat is alligned with users spine, then wear. Else, align and next wear them;
- If the time is equal 0 then, turn off the Lokomat.

ZeroG

- If the waistcoat is dressed and the Support is fitted, then lift the patient. Else wear them and fitted the cable;
- If the Speed was adjusted the patient start walk, else, adjust the speed and next start the walk;
- If the person is unbalanced, the lift it.
- If the session time is over, then get patient off the zeroG.

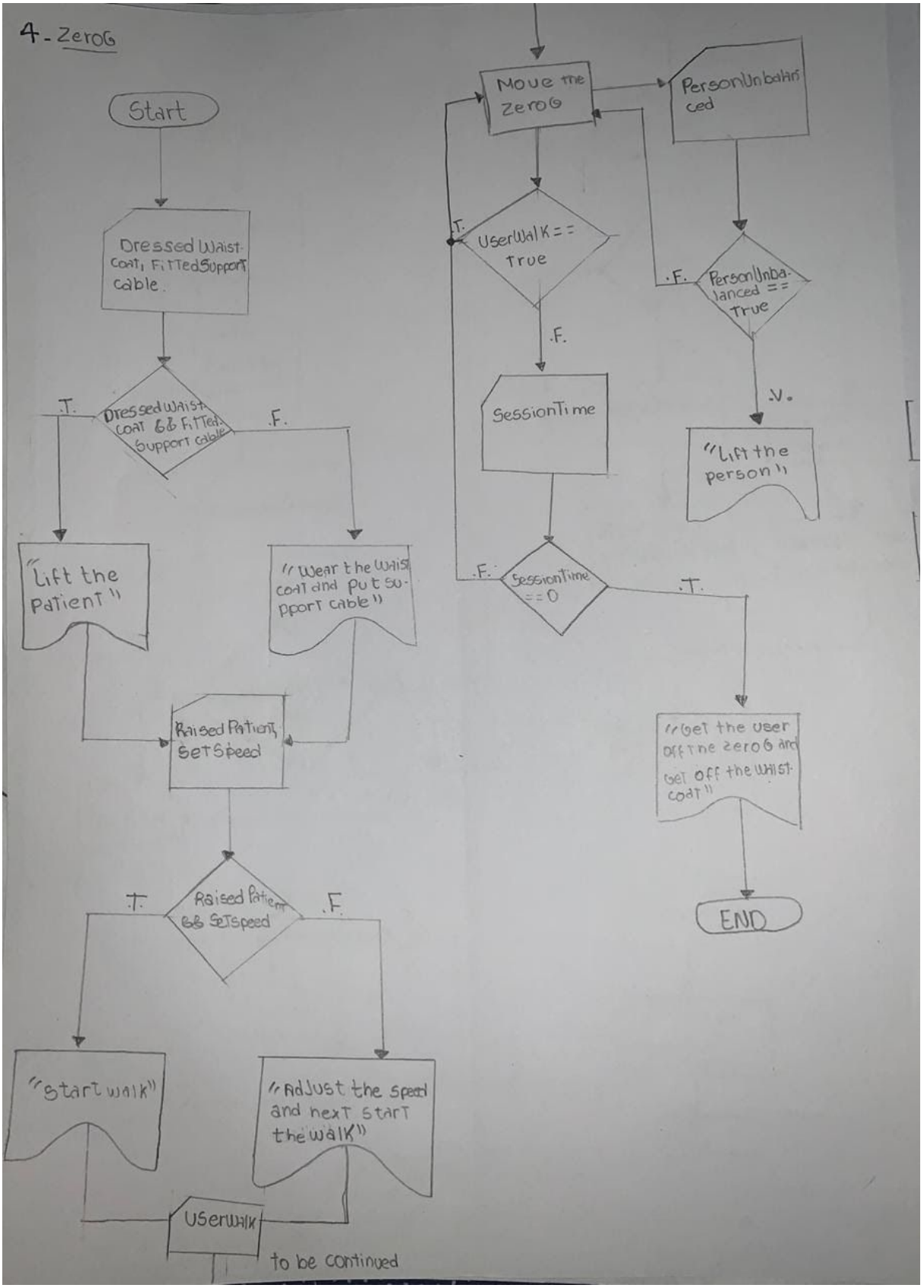
Structure of repetition:

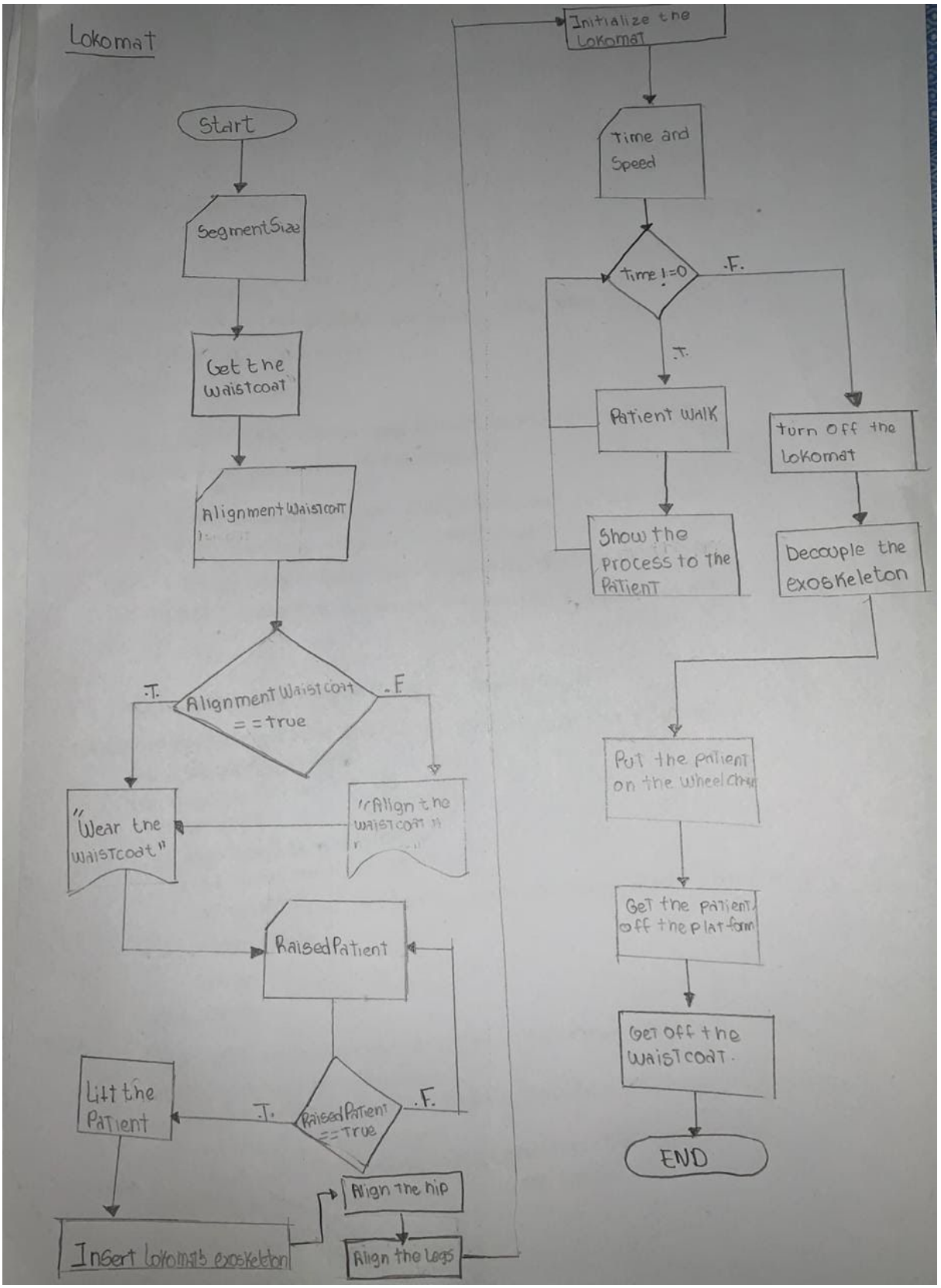
Lokomat:

- While the time does not equal the 0, the patient walk.

ZeroG

- Repeat movement of ZeroG, while the user walk.

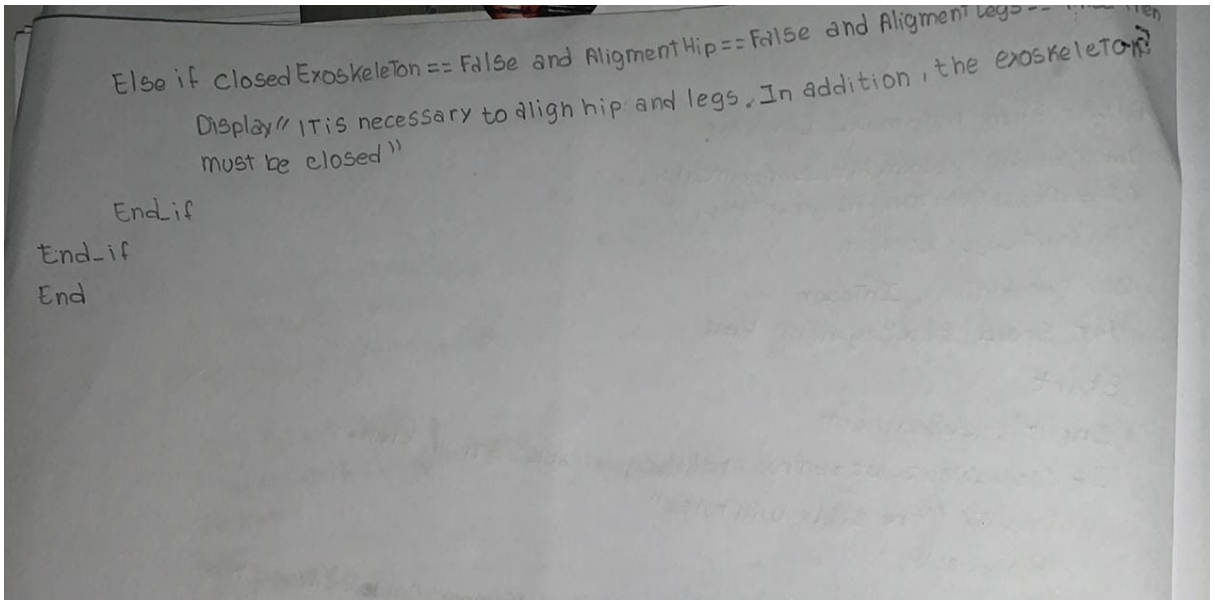

4- ZeroG
Start
Dressed Waist-coat, FiTTedSupport cable.
.T.
DressedWaist-coat && FiTTed-Support cable
.F.
"Lift the PatienT"
"Wear the Waist coat and Put Su-pport cable"
Raised PatienT, SetSpeed
.T.
Raised Patient && SetSpeed
.F.
"start walk"
"Adjust the speed and next START the walk"
UserWalk
to be continued
Move the ZeroG
PersonUnbalan ced
.T.
UserWalK == True
.F.
Person(Unba-lanced == True
.F.
SessionTime
.V.
"Lift the person"
.F.
SessionTime == 0
.T.
"Get the user off the zeroG and Get off the Waist-coat"
END


Lokomat
Start
SegmentSize
Get the Waistcoat
AlignmentWaistcoat
AlignmentWaistcoat == true
.T.
.F.
"Wear the waistcoat"
"Align the waistcoat"
RaisedPatient
RaisedPatient == True
Lift the Patient
Insert Lokomat's exoskeleton
Align the hip
Align the legs
Initialize the Lokomat
Time and Speed
Time != 0
Patient Walk
Show the process to the Patient
turn off the Lokomat
Decouple the exoskeleton
Put the patient on the wheelchair
Get the patient off the platform
Get off the waistcoat.
END

5.

```
Algorithm Automatic Lokomat
Var ClosedWaistcoat, FittedSupportCable,
ClosedExosKeleton, AligmentHip,
Aligment Legs Boolean
Var SessionTime, InTeger
Var Speed, SizeSegment Real
Start
Input SizeSegment
If ClosedWaistcoat == True and FittedSupportCable == True then
   Display "the cable will raise"
   RaiseCable;
Else
   If ClosedWaistcoat == False and FittedSupportCable == True then
      Display "the waistcoat is not closed"

   Else if FittedCable == False and ClosedWaistcoat == true then
      Display "The support cable is not fitted"
   Else if FittedCable == False and ClosedWaistcoat == false then
      Display "close the waistcoat and fit the support cable"
   End_if
End_if
input ClosedExosKeleton, AligmentHip, AligmentLegs
If ClosedExosKeleton == True and AligmentHip == True and AligmentLegs == true then
   Input SessionTime, Speed
   While SessionTime != 0 do
      StartWalk
      SessionTime = SessionTime - 1;
      If SessionTime == 0 then
         Display "The session time is over, and support cable will down"
         DownCable;
      End_if
   End_While
Else
   If ClosedExosKeleton == True and AligmentHip == True and Aligment Legs == False then
      Display "The Legs are not aligned"
   Else if ClosedExosKeleton == True and AligmentHip == False and Aligment Legs == True then
      Display "the Hip is not Aligned"
   Else if ClosedExosKeleton == False and AligmentHip == True and Aligment Legs == True then
      Display "The Lokomat is exoskeleton is not closed"
```



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    Else if closedExoskeleton == False and AligmentHip == False and AligmentLegs
        Display "It is necessary to align hip and legs. In addition, the exoskeleton
        must be closed"
    End_if
End_if
End
```

```
Algorithm Automatic Zero6
Var ClosedWaistcoat, FittedSupportCable, PersonUnbalanced, PatientWalk Boolean
Var SessionTime integer
Var Speed Real

If ClosedWaistcoat == True and FittedSupportCable == True then
    input Speed, SessionTime
    While SessionTime != 0 do

      input PatientWalk
      if PatientWalk == False then
       StopWalk
      Else
       StartWalk
      End_if
      SessionTime = SessionTime -1
      If SessionTime == 0 then
        Display "the session time is over"
        StopWalk
      End_if

  Else
    if closedWaistcoat == True and FittedSupportCable == False then
      Display "the support cable is not fitted"
    Else if ClosedWaistcoat == False and FittedSupportCable == True then
      Display "the waistcoat is not closed"
    Else if ClosedWaistcoat == False and FittedSupportCable == False then
      Display "close the waistcoat and fit the support cable"
    End_if
  End_if
End
```