


instrumentation and software for research

Understanding Components of Med State Notation (MSN)



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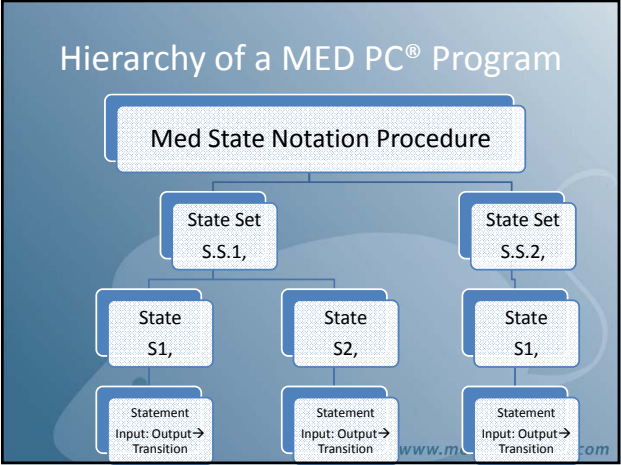
Overall Goals



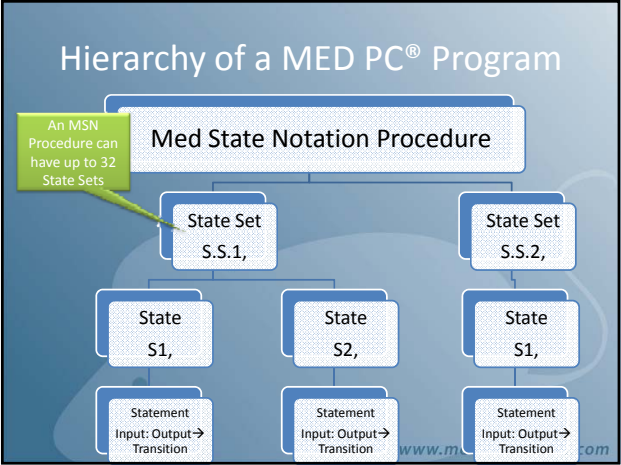
- Understand basic components of Med State Notation (MSN) Programs
- Learn how to organize State Sets, States, and Statements

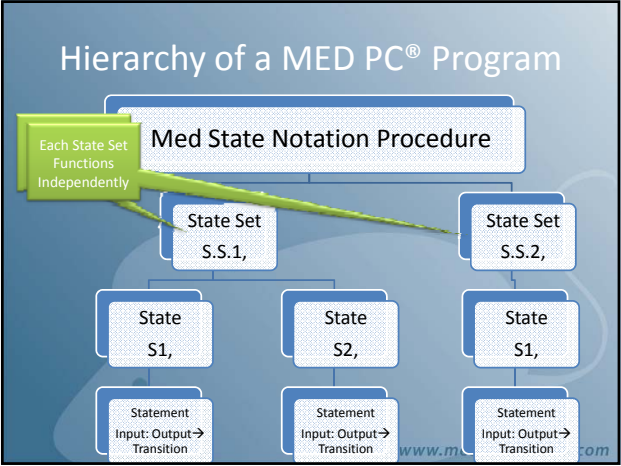


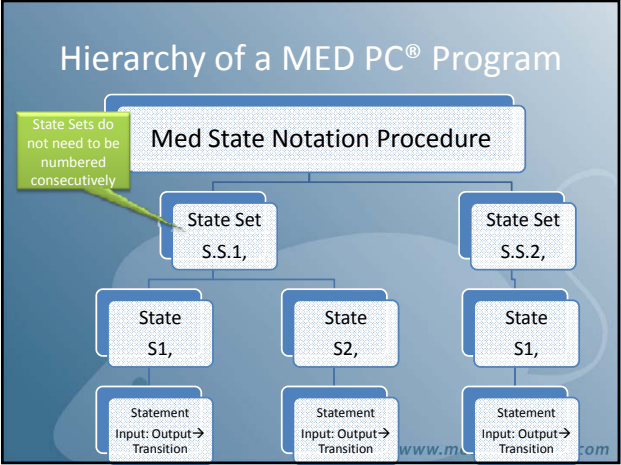
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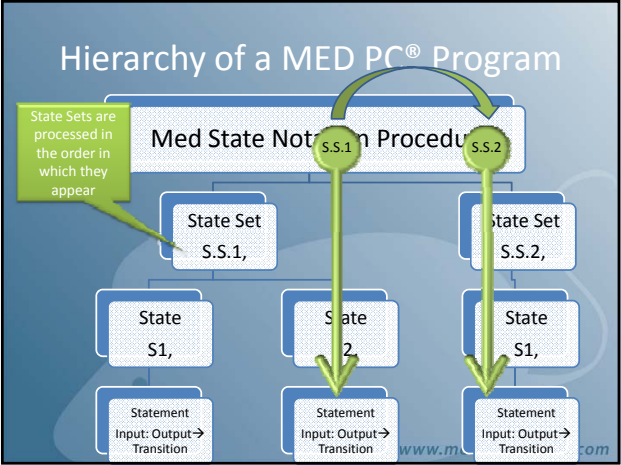
Understanding components of MSN







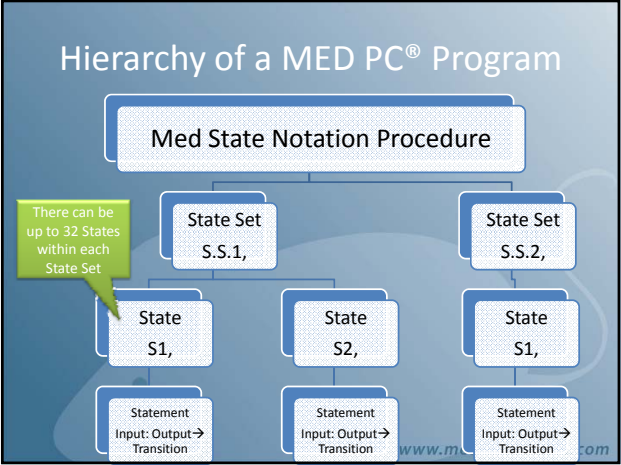
Understanding components of MSN

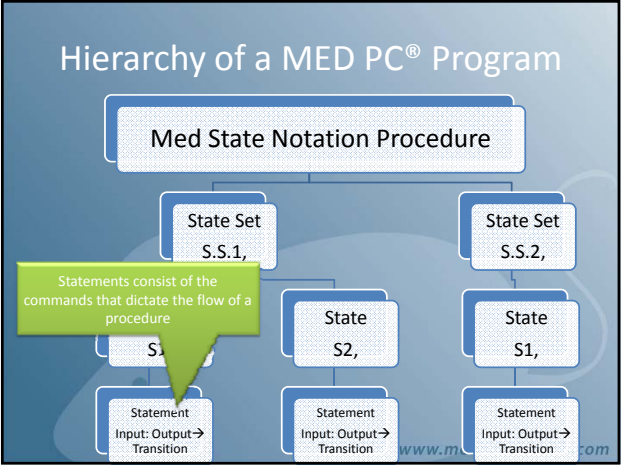


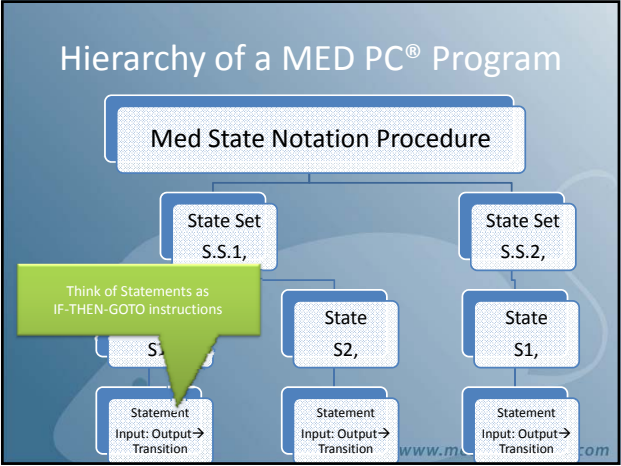
State Sets **S.S.1,**

- State Sets can be written so that they have unique functions that can be incorporated in many different programs
 - Delivery of a reward
 - Response counter
 - Determining if or when a reward should be delivered
 - Placing data into different counters depending on various aspects of the procedure
 - i.e. pause time, run time, or segments of a session

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A Few Examples

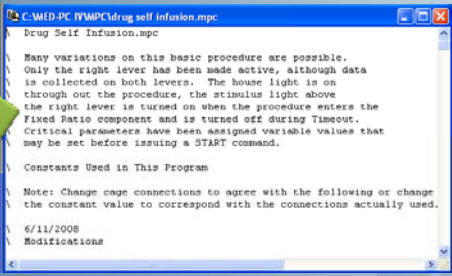
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Main Program *****
S.S.1, \ Display default values. Turn HouseLight ON when Procedure "ST
S1,
#START: CLEAR I,60; ON "HouseLight;
SET P("Node) = BOX, A(10) = 1, A(14) = P("Pamp1) ----> S2
1*: SHOW I,STEP,P("Step), 6,PULSE1,P("Pwidth1), 11,AMPL1,P("Pamp1
SHOW 16,DELAT,P("Pdelay), 21,PULSE2,P("Pwidth2), 26,AMPL2,P("Pamp2
SHOW 31,FREQ,P("Freq), 36,TRAIN,P("Dur), 41,MODE,BOX ---->
S2,
0.1* -Stimulate(S0, P[1], P[2], P[3], P[4], P[5], P[6], P[7], P[8]);-
S3, \ Free Stimulation Given at Start of Procedure
0.01* -Stim(S0, BOX, 11* -> ADD A(5), A(14); 21 ----> S4
S4, \ Pause during Stimulation. Note: Duration of Stimulation
\ is passed with Stimulate command parameter P[7].
\ Test for a Response during Free Stimulation.
0.5* IF A(5) = 1 [Response, SNoResponse]
SResp: ----> S5
  
```

Understanding components of MSN

A Few Examples

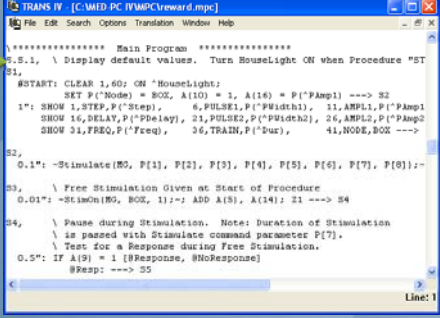
- Create a "Header" by using Comments at the beginning of a procedure
- Explain what the program does
- Explain what data is collected



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A Few Examples

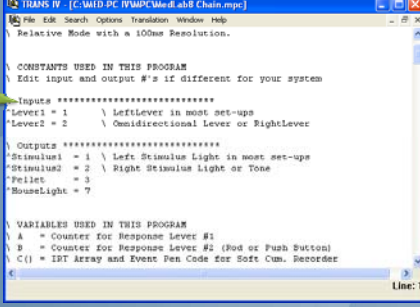
Use Comments to indicate what is happening in a State Set or State



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A Few Examples

Use Constants to define all Inputs and Outputs, and use Comments to indicate Variables



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A Few Examples

Use standard spacing and capitalization to increase readability

```

*****
S.S.1.
S1.
*****
S1:
S1: CUBAN 1,60; ON S1 SET P1=BOX,A(10)= 1,A(16)=P(3)--->S2
I*SHOW 1,STEP,P(0),6,PULSE1,P(2),11,AMPL1,P(3);
SHOW 16,DELAY,P(4),21,PULSE2,P(5),26,AMPL2,P(6);
SHOW 31,FRWQ,P(7),36,TRAIN,P(8),41,WGDE,BOX-->SX
S2.
0.1*--Stimulate(MG,P(1),P(2),P(3),P(4),P(5),P(6),P(7),P(8));---->S3
S3.
0.01*--StimOn(MG,BOX,1);-; ADD A(5),A(14); Z1---->S4
S4.
0.5*IF A(9)=1 [response,whoResponse]
#Resp!-->S5
whoResponse:IF A(4)=0 [wt,#P]
#T!-->S6
#F!-->S11
#R1:ADD A(7),A(11); SET A(9)=1--->SX
S5.
0.5*ADD A(1); -StimOn(MG,BOX,1);-; Z2;
IF A(4)=0 [wt,#P]
#T!-->S7
#F:ADD A(0)--->S12
S6.
7.5*ADD A(0); Z3--->S7
#R1:ADD A(1),A(7),A(11); -StimOn(MG,BOX,1);-; Z2--->S7
S7.
0.01* BOX 1,BoxLen #,A(10), Z,F Train,A(11), F,Box Train,P(A(10))---->S1
*****
S.S.2.
S2:
S2: ADD T1=BOX #,Contact Length,E, T,Train #,T;
SET C(1)=A(10), C(14)= T, C(14)= -BOX,BOX---->S4
S4.
0.01* SET E = E + 0.01; BOX #,Contact Length,E;
IF E # A(10) [RMaxLen, BCont]
#Box: BOX #,Contact Length,BoxLen,0---->S5
#CLen:---->S4
S5: BOX #,Contact Length,BoxLen,0---->S3
S3.
; A R1-pulse width except the train and release
; A R2-pulse width and # except the amplitude train
#R1: CLEAR R,0; SET C(14)= E, J = 1, S, E = 0;
IF E # A(10) [RMaxLen, BCont]
#Box: SET A(10)=A(10)+1, T = 0---->S3
#CLen:---->S3
#R2: CLEAR R,0; BOX T; SET E = 0---->S3
S3.
*****
BAR CONTACT DEFINED - Show CONTACT, Show RELEASE
*****
S.S.3.
; Box Contact Defined - Show Contact, Show Release.
S3.
#START:---->S2
S2.
#START: ADD T; IF T # 2 [Contact, BoxContact]
#Contact: SET T = 0; Z3---->S3
#BoxContact:---->S2
0.01* SET T = 0---->S2
S2.
;
0.01* SX---->S3
#F:Box---->S3
*****
*****
S.S.4.
; Box Train,BoxLen #,A(10), Z,F Train,A(11), F,Box Train,P(A(10))---->S1
*****

```

A Few Examples: What Not to Do

"This is NO"

```

S.S.1.
S1.
*****
S1:
S1: CUBAN 1,60; ON S1 SET P1=BOX,A(10)= 1,A(16)=P(3)--->S2
I*SHOW 1,STEP,P(0),6,PULSE1,P(2),11,AMPL1,P(3);
SHOW 16,DELAY,P(4),21,PULSE2,P(5),26,AMPL2,P(6);
SHOW 31,FRWQ,P(7),36,TRAIN,P(8),41,WGDE,BOX-->SX
S2.
0.1*--Stimulate(MG,P(1),P(2),P(3),P(4),P(5),P(6),P(7),P(8));---->S3
S3.
0.01*--StimOn(MG,BOX,1);-; ADD A(5),A(14); Z1---->S4
S4.
0.5*IF A(9)=1 [response,whoResponse]
#Resp!-->S5
whoResponse:IF A(4)=0 [wt,#P]
#T!-->S6
#F!-->S11
#R1:ADD A(7),A(11); SET A(9)=1--->SX
S5.
0.5*ADD A(1); -StimOn(MG,BOX,1);-; Z2;
IF A(4)=0 [wt,#P]
#T!-->S7
#F:ADD A(0)--->S12
S6.
7.5*ADD A(0); Z3--->S7
#R1:ADD A(1),A(7),A(11); -StimOn(MG,BOX,1);-; Z2--->S7
S7.
0.01* BOX 1,BoxLen #,A(10), Z,F Train,A(11), F,Box Train,P(A(10))---->S1
*****

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