

Trilingual interactive Table of Mendeleev on HP Prime

```
Elem_Case(n,s,a)
//Affichage de la case d'un élément (en blanc si s=1)
BEGIN
LOCAL sb,lg,cl,bl=#FFFFFF,coul;

sb:=IFTE(a,Mn_Cl.Cell(20,3),Mndlv.Cell(n,1));
lg:=23*Mndlv.Cell(n,14)-15;
cl:=17*Mndlv.Cell(n,13)-7;
coul:=Mndlv.Cell(n,12);

IF s>0 THEN
RECT_P(cl,lg,cl+15,lg+21,0,bl);
ELSE
RECT_P(cl,lg,cl+15,lg+21,Mn_Cl.Cell(coul,1));
END;
TEXTOUT_P(sb,cl+1,lg+2,1);

END;

Elem_Car(n)
//Affichage des caractéristiques d'un élément
BEGIN
LOCAL coul,ic,lb,gd,un,nu;

coul:=Mndlv.Cell(n,12);
RECT_P(47,1,212,75);RECT_P(130,2,272,13);
TEXTOUT_P(Mndlv.Cell(n,1+D),47,2,2,Mn_Cl.Cell(coul,1));
TEXTOUT_P(Mn_Cl.Cell(coul,1+D),135,4,1,Mn_Cl.Cell(coul,1));

FOR ic FROM 1 TO 6 DO
lb:=Mn_Cl.Cell(ic+10,1+D);
gd:=Mndlv.Cell(n,ic+4);
un:=Mn_Cl.Cell(ic+10,1);
nu:=Mn_Cl.Cell(ic+10,4+D);
TEXTOUT_P(lb+IFTE(gd,gd+un,nu),47,10*ic+5,1);
END;

END;

EXPORT Mndl_Dsp()
//Affichage de la table de Mendeleiev
BEGIN
LOCAL ie,na,lst,aut;

na:=LEFT(Mn_Cl.Cell(20,2),11);
lst:=ASC(MID(na,5,1));
A:=1-(lst(1)=233);

RECT_P();
FOR ie FROM 1 TO 112 DO
Elem_Case(ie,0,A);
END;

TEXTOUT_P(na,235,180,1,Mn_Cl.Cell(20,1));
RECT_P(47,169,49,225,0);
RECT_P(49,200,60,202,0);
RECT_P(49,224,60,226,0);

END;
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EXPORT Mendeleiev()
//Navigation dans le tableau de Mendeleiev
BEGIN
LOCAL nv,ie,n_old,n,nn,lgn=5,cln=11,nk;
LOCAL an,titre,list_choix,ic,lst_alph,ia,raon,tmo=0.2;
L9:={14,15,16,17,18,20,21,22,23,24,25,26,27,28,29,31,32,33,34,35,37,38,39,40,42,43};

// choix de la langue D=1 en Français, D=2 in English, D=3 en Español
titre:=Mn_Cl.Cell(17,2);
list_choix:={Mn_Cl.Cell(18,2),Mn_Cl.Cell(18,3),Mn_Cl.Cell(18,4)};
D:=1;CHOOSE(D,titre,list_choix);
titre:=Mn_Cl.Cell(17,1+D);

REPEAT
list_choix:={Mn_Cl.Cell(19,1+D),Mn_Cl.Cell(19,4+D)}+"A, B, C,...";
// si nv=1, navigation 2D touches et souris, si nv=2, navigation alpha
CHOOSE(nv,titre,list_choix);
IF nv=2 THEN
lst_alph:=MAKELIST(" ",X,1,112);
FOR ie FROM 1 TO 112 DO
lst_alph(ie):=LEFT(Mndlv.Cell(Mndlv.Cell(ie,14+D),1+D),1);
END;
END;
// on affiche la table
Mndl_Dsp();

n_old:=IFTE(nv=1,47,Mndlv.Cell(1,14+D));n:=n_old;ie:=1;
WHILE nv DO
// on pointe sur le "premier" élément
Elem_Case(n,1,A);
RECT_P(5,200,42,236);
TEXTOUT_P(IFTE(D=1,"an",IFTE(D=2,"year","año")),6,200,1);
an:=Mndlv.Cell(n,11);
IF an THEN TEXTOUT_P(an,6,210,2) END;
TEXTOUT_P("n="+n,6,225,1);

// on affiche les données de l'élément courant
Elem_Car(n);

// boucle de navigation mixte (touches/souris) dans le tableau
//
WHILE 1 DO
// si la souris est autorisée (navigation 2D)
IF nv==1 THEN
raon:=MOUSE();
IF SIZE(raon(1)) THEN
// si on a cliqué avec la souris dans une case
cln:=FLOOR((IP(raon(1,1)-10))/17)+1;
lgn:=FLOOR((IP(raon(1,2)-8))/23)+1;
IF lgn>0 AND cln>0 THEN
IF lgn<=7 THEN
nn:=Mn_Nv.Cell(lgn,cln);
IF nn>0 THEN
n_old:=n;Elem_Case(n_old,0,A);
n:=nn;BREAK;
END;
END;
IF lgn>8 THEN
lgn:=lgn-1;
nn:=Mn_Nv.Cell(lgn,cln);
IF nn>0 THEN
n_old:=n;Elem_Case(n_old,0,A);
n:=nn;BREAK;
END;
END;
END;
END;
END;
END;
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```

// si on a touché au clavier (flèches)
CASE
  IF ISKEYDOWN(4) THEN BREAK(2); END;
  IF ISKEYDOWN(2) AND lgn>0 AND nv==1 THEN
    nn:=Mn_Nv.Cell(lgn-1,cln);
    IF nn>0 THEN
      n_old:=n;Elem_Case(n_old,0,A);
      lgn:=lgn-1;n:=nn;
    END;
    WAIT(tmpo);BREAK;
  END;
  IF ISKEYDOWN(2) AND ie>1 AND nv==2 THEN
    n_old:=n;Elem_Case(n_old,0,A);
    ie:=ie-1;n:=Mndlv.Cell(ie,14+D);
    WAIT(tmpo);BREAK;
  END;
  IF ISKEYDOWN(12) AND nv==1 THEN
    nn:=Mn_Nv.Cell(lgn+1,cln);
    IF nn>0 THEN
      n_old:=n;Elem_Case(n_old,0,A);
      lgn:=lgn+1;n:=nn;
    END;
    WAIT(tmpo);BREAK;
  END;
  IF ISKEYDOWN(12) AND ie<112 AND nv==2 THEN
    n_old:=n;Elem_Case(n_old,0,A);
    ie:=ie+1;n:=Mndlv.Cell(ie,14+D);
    WAIT(tmpo);BREAK;
  END;
  IF ISKEYDOWN(7) AND cln>0 AND nv==1 THEN
    nn:=Mn_Nv.Cell(lgn,cln-1);
    IF nn>0 THEN
      n_old:=n;Elem_Case(n_old,0,A);
      cln:=cln-1;n:=nn;
    END;
    WAIT(tmpo);BREAK;
  END;
  IF ISKEYDOWN(8) AND nv==1 THEN
    nn:=Mn_Nv.Cell(lgn,cln+1);
    IF nn>0 THEN
      n_old:=n;Elem_Case(n_old,0,A);
      cln:=cln+1;n:=nn;
    END;
    WAIT(tmpo);BREAK;
  END;
  IF nv==2 THEN
    ic:=1;
    REPEAT
      IF ISKEYDOWN(L9(ic)) THEN
        ia:=POS(lst_alph,CHAR(64+ic));
        IF ia THEN
          n_old:=n;Elem_Case(n_old,0,A);
          ie:=ia;n:=Mndlv.Cell(ie,14+D);
          WAIT(tmpo);BREAK(2);
        END
      END;
      ic:=ic+1;
    UNTIL ic>26;
  END
END;

END;
// _____
END
UNTIL NOT nv;

END;

```

Screen captures of the HP Prime (trilingual software: English, Français and Español)

<div> <div> <div> <div> <div>H</div> <div>Li</div> <div>Na</div> <div>K</div> <div>Rb</div> <div>Cs</div> <div>Fr</div> </div> <div> <div>Be</div> <div>Mg</div> <div>Ca</div> <div>Sr</div> <div>Ba</div> <div>Ra</div> </div> <div> <div>B</div> <div>Al</div> <div>Ga</div> <div>In</div> <div>Tl</div> <div>Pb</div> <div>Bi</div> <div>Po</div> <div>At</div> <div>Rn</div> </div> <div> <div>C</div> <div>Si</div> <div>Ge</div> <div>Sn</div> <div>Pb</div> </div> <div> <div>N</div> <div>P</div> <div>As</div> <div>Sb</div> <div>Bi</div> </div> <div> <div>O</div> <div>S</div> <div>Se</div> <div>Te</div> <div>Po</div> </div> <div> <div>F</div> <div>Cl</div> <div>Br</div> <div>I</div> <div>At</div> </div> <div> <div>He</div> <div>Ne</div> <div>Ar</div> <div>Kr</div> <div>Xe</div> <div>Rn</div> </div> </div> <div> <div>Silver</div> <div>(Transition metals)</div> <div>Molar mass: 107.9 g/mole</div> <div>Density: 10.49</div> <div>Atomic radius: 165 pm</div> <div>Electronegativity: 1.93</div> <div>Melting Point: 962 °C</div> <div>Boiling Point: 2212 °C</div> </div> </div></div>																	
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Touch (or mouse) navigation and Keyboard navigation (⬅️, ➡️, ⬆️, ⬇️, A, B, C,...)

Data are stored in Spreadsheets created and named with the Spreadsheet App of the HP Prime :

- The characteristics of the elements of the Periodic Table are stored in **Mndlv** spreadsheet.
- Types and Colors of categories of elements and trilingual menus are stored in **Mn_Cl** spreadsheet.
- The locations of the elements in the periodic table are in **Mn_Nv** spreadsheet.

Thus it is possible to modify the data (or to translate some) without interfering with interactive navigation algorithm stored in the program that is **independent** of data.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	Symb	Nom	Name	Nombre	mM	densité	rA	eN	tF	tE	an	tinte	cl	lg			
2	H	Hydrogène	Hydrogen	Hidrógeno	1	0.000899	53	2.2	-259	-253		1766	1	1	1	89	89
3	He	Hélium	Helium	Helio	4	0.0001785	31	0		-269		1895	2	18	1	13	13
4	Li	Lithium	Lithium	Litio	6.9	0.535	167	0.98	181	1347	1817	3	1	2	95	95	95
5	Be	Béryllium	Beryllium	Benlio	9	1.848	112	1.57	1278	2970	1798	4	2	2	51	51	51
6	B	Bore	Boron	Boro	10.8	2.46	87	2.04	2300	2550	1808	7	13	2	47	18	18
7	C	Carbone	Carbon	Carbono	12	2.26	67	2.55	3370	4827	0	1	14	2	18	33	33
8	N	Azote	Nitrogen	Nitrógeno	14	0.001251	56	3.04	-210	-196	1772	1	15	2	33	85	85
9	O	Oxygène	Oxygen	Oxígeno	16	0.001429	48	3.44	-218	-183	1774	1	16	2	85	56	16
10	F	Fluor	Fluorine	Flúor	19	0.001696	42	3.9	-220	-188	1886	8	17	2	7	97	56
11	Ne	Néon	Neon	Neón	20.2	0.0009	38	0	-249	-246	1896	2	18	2	56	4	4
12	Na	Sodium	Sodium	Sodio	23	0.968	190	0.93	98	883	1807	3	1	3	97	83	97
13	Mg	Magnésium	Magnesium	Magnesio	24.3	1.738	145	1.31	649	1090	1755	4	2	3	83	107	83
14	Al	Aluminium	Aluminium	Aluminio	27	2.7	118	1.61	660	2467	1827	6	13	3	107	5	107
15	Si	Silicium	Silicon	Silicio	28.1	2.33	111	1.9	1410	2355	1824	7	14	3	5	35	5
16	P	Phosphore	Phosphorus	Fósforo	31	1.823	98	2.19	44	280	1669	1	15	3	35	48	35
17	S	Soufre	Sulfur	Azufre	32.1	1.96	88	2.58	119	445	0	1	16	3	4	20	48
18	Cl	Chlore	Chlorine	Cloro	35.5	0.003214	79	3.16	-101	-35	1774	8	17	3	48	98	20
19	Ar	Argon	Argon	Argón	39.9	0.001784	71	0	-189	-186	1894	2	18	3	20	6	98
20	K	Potassium	Potassium	Potasio	39.1	0.856	243	0.82	64	774	1807	3	1	4	98	58	6
21	Ca	Calcium	Calcium	Calcio	40.1	1.55	194	1	840	1484	1808	4	2	4	6	55	58
22	Sc	Scandium	Scandium	Escandio	45	2.985	184	1.36	1539	2832	1878	5	3	4	17	17	55
23	Ti	Titane	Titanium	Titanio	47.9	4.507	176	1.54	1660	3287	1791	5	4	4	24	24	17
24	V	Vanadium	Vanadium	Vanadio	50.9	6.11	171	1.63	1890	3380	1801	5	5	4	27	27	27
25	Cr	Chrome	Chromium	Cromo	52	7.14	166	1.66	1860	2672	1797	5	6	4	112	112	29
26	Mn	Manganèse	Manganese	Manganeso	54.9	7.47	161	1.55	1224	1962	1774	5	7	4	29	29	112
27	Fe	Fer	Iron	Hierro	55.8	7.874	156	1.83	1535	2750	0	5	8	4	96	96	24
28	Co	Cobalt	Cobalt	Cobalto	58.9	8.9	152	1.88	1495	2870	1735	5	9	4	58	110	96
29	Ni	Nickel	Nickel	Niquel	58.7	8.908	149	1.91	1453	2732	1751	5	10	4	55	105	110
30	Cu	Cuivre	Copper	Cobre	63.5	8.92	145	1.9	1083	2567	0	5	11	4	110	66	66
31	Zn	Zinc	Zinc	Zinc	65.4	7.14	142	1.65	420	907	0	5	12	4	105	99	105
32	Ga	Gallium	Gallium	Galio	69.7	5.904	136	1.81	30	2403	1875	6	13	4	66	68	99
33	Ge	Germanium	Germanium	Germanio	72.6	5.323	125	2.01	937	2830	1886	7	14	4	99	63	21
34	As	Arsenic	Arsenic	Arsénico	74.9	5.727	114	2.18	0	613	0	7	15	4	68	100	50
35	Se	Sélénium	Selenium	Selenio	79	4.819	103	2.55	217	685	1817	1	16	4	50	9	38

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