Correction proposée par
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Corrigés Bac Pratique Informatique

Section Math & Sciences & Technique
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```
Program KParfait_13H_Suj1;
Uses wincrt;
Var N,M:integer;

Procedure saisie(var N,M:integer);
Begin
     repeat
       write('2 entiers : ');readln(n,m);
     until (n >10) and (n<=m) and (m<31000);
End;

Function som_div(x:integer):longint;
Var    i:integer;
       s:longint;
begin
  s:=0;
  For i:=1 to x do
    If x mod i = 0 then
      s:=s+i;
  som_div:=s ;
end;

Procedure Affich_KParfait(N,M,K:integer);
Var  i:integer;
begin
  For i:=N to M do
   begin
    {writeln(i,' ** ',som_div(i));  }
   If som_div(i)=k*i Then
    write (i:6);
   end;
end;

Procedure Affiche(N,M:integer);
Var  i,cp:integer;
begin
    For cp:=2 to 4 do  {Ils sont trés rars !!!}
     begin
      writeln('Entiers ',cp,' Parfaits :');
      Affich_KParfait(N,M,cp);
      Writeln ;
     end;
end;

BEGIN
 Saisie(N,M);
 Affiche(N,M);
END.
```

```
Program Homogene_13H_Suj2;
Uses wincrt;
Type  Tab=array [1..50] of integer ;

Var N,M:integer;

Procedure saisie(var N,M:integer);
Begin
    repeat
      write('2 entiers : ');readln(n,m);
    until (n >=5) and (n<m) ;
End;

Procedure remplir_fact_prem(n:integer ; Var TF:tab; Var F : integer);
Var    i:integer;
begin
  f:=0;
  i:=2;
  repeat
   If n mod i = 0 then
    begin
      f:= f + 1;
      TF[f] := i;
      n := n div i;
    end
    else
      i := i + 1;
  until n=1;
end;

Function exist(x,n:integer ; T:tab) : boolean;
Var    i:integer;
begin
   i:=1;
  While (t[i]<>x) and (i<=n) do
    inc(i);
  exist:=i<=n;
end;

Function Parcours(T,V:tab ; N1,N2 : integer) : boolean;
Var    i:integer;
       Ok:boolean;
begin
   i:=1;
  Repeat
     Ok := exist(t[i],N2,V) ;
     If Ok then
      inc(i);
  Until Not Ok Or(i>N1);
  Parcours:=i>N1 ;
end;
```

```
Procedure Affiche(N:integer ; T:tab);
Var  i:integer;
begin
  For i:=1 to N-1 do
   write (T[i],'*');
   write (T[N]); {Afficher dernier élément sans *}
end;

Procedure Affich_Si_Homogen(N,M:integer);
Var  i,n1,m1:integer;
      Tn,Tm:Tab ;
begin
 Remplir_fact_prem(N,Tn,n1);
 Write(N,' = ');
 Affiche(n1,Tn);
 Writeln;                        {Affichage non demandé !!}
 Remplir_fact_prem(M,Tm,m1);
 Write(M,' = ');
 Affiche(m1,Tm);
 Writeln;
 If Parcours(Tn,Tm,n1,m1) and Parcours(Tm,Tn,m1,n1) Then
  writeln(n,' et ',m,' sont Homogènes ' )
    else   writeln(n,' et ',m,' ne sont pas Homogènes ' );
end ;

BEGIN
 Saisie(N,M);
 Affich_Si_Homogen(N,M);
END.
```

```
Program decomp_PGCD_13H_Suj3;
Uses wincrt;
Type  Tab=array [1..50] of integer ;

Var TA,TB:Tab;
    N1,N2,A,B:integer;

Procedure saisie(var A,B:integer);
Begin
     repeat
       writeln('A et B : ');readln(a,b);
     until (a>=10) and (a<=b) and (b<=10000);
End;

Procedure remplir_fact_prem(n:integer ; Var TF:tab; Var k: integer);
Var    i:integer;
begin
  k:=0;
  i:=2;
  repeat
   If n mod i = 0 then
    begin
      k:= k + 1;
      TF[k] := i;
      n := n div i;
    end
    else
      i := i + 1;
  until n=1;
end;

Procedure Compter(T:Tab ; i,n:integer ; var nb,j:integer);{dans le tableau initial A}
Var x:integer ;
Begin
    x:=T[i];
    nb:=1; j:=i+1;
    While (x=t[j]) and (j<=n) do
      begin
        inc(nb);
        inc(j);
      end;
End;

Function Occurence(T:Tab ; x,n:integer ):integer;{dans le tableau cible B}
Var i,nb:integer ;
Begin
  nb:=0;
  For i:=1 to n do
   if t[i]=x then inc(nb);
  occurence:=nb;
End;
```

```
Procedure aff_decomp( TA,TB:tab; A,B,NA,NB: integer);
Var   x,p,j,nba,nbb,min,c,i:integer;
begin
   Write('PGCD(',a,',',b,')=');
   i:=1; p:=1;
   repeat
    compter(ta,i,na,nba,j);
    nbb:=occurence(tb,ta[i],nb);
    if nbb<>0 then
     begin
      if nba<nbb then min:=nba
       else min:=nbb;
      for c:=1 to min do
       begin
        write(ta[i],'*');
        p:=p*ta[i];
       end;
      end;
     i:=j;
   until (i>na);
   writeln('=',p);
end;

Procedure affiche(N:integer ; T:tab);
Var  i:integer;
begin
 For i:=1 to N do
     write (T[i]:6);
end;

BEGIN
 Saisie(A,B);
 remplir_fact_prem(A,TA,N1);
 remplir_fact_prem(B,TB,N2);
 Affiche(N1,TA);
 Writeln;
 Affiche(N2,TB);
 Writeln;
 aff_decomp( TA,TB,A,B,N1,N2);
END.
```

```
Program Presque_Premier_13H_Suj4;
Uses wincrt;
Type  Tab=array [1..50] of integer ;

Var T:Tab;
    N,K:integer;

Procedure saisie(var N,K:integer ; Var T : Tab);
Var i:integer;Begin
     repeat
       write('N : ');readln(n);
     until n in [5..50] ;
     for i := 1 to n do
       repeat
         write (' T[',i,']= ');
         readln(t[i]);
       until (T[i]>=100) and (T[i]<=999);
     Randomize;
     K:=Random(4)+2 ;Writeln('K=',K) ;
End;

Procedure remplir_fact_prem(n:integer ; Var TF:tab; Var F : integer);
Var    i:integer;
begin
  f:=0;
  i:=2;
  repeat
   If n mod i = 0 then
    begin
      f:= f + 1;
      TF[f] := i;
      n := n div i;
    end
    else
      i := i + 1;
  until n=1;
end;

Procedure affiche(N:integer ; T:tab);
Var  i:integer;
begin
 For i:=1 to N-1 do
   write (T[i],'*');
   write (T[N]); {Afficher dernier élément sans *}
end;

Procedure Aff_KPP(N,k : integer ; T:tab);
Var   f,i:integer;
      Tf:Tab;
begin
    for i:=1 to n do
       begin
        remplir_fact_prem(T[i],TF,F);
```

```
        If F=K then
                begin
                 Writeln(T[i],' est dit ',k,'-pp : ');
                 Write(T[i],'=');
                 Affiche(F,TF);
                 Writeln;
                end;
       end;
end;

BEGIN
 Saisie(N,K,T);
 Aff_KPP(N,K,T);
END.
```

```
Program Acces_Site_14H_Suj1;
Uses wincrt;
Type st=string[20];
     Tab=array [1..10] of st ;

Var
   id,pw:st;
   Tid,Tpw:Tab;
   N:integer;

Procedure Saisieid(var id:st);
begin
     repeat
          write('Identifiant : '); readln(id);
     until id<>'' ;
end;

Procedure Saisiepw(var pw:st);
begin
     repeat
          write('Mot de passe 6 caractères au min : '); readln(pw);
     until length(pw)>=6 ;
end;

Function Verif(p,N:integer ; T:Tab):boolean;
var
  i:integer;
  id:st;
begin
    i:=1;
    id:=T[p] ;
     While (id<>T[i]) and (i<p) do
        i:=i+1;
     verif:=i=p;
end;

Procedure Remplir(var N:integer ; Var Tid,Tpw:Tab) ;
Var i:integer;
begin
     repeat
          write('N : '); readln(N);
     until N in [2..10] ;
     Writeln('Remplir Tid');
     For i:=1 to N do
        repeat
          write('Tid[',i,']='); readln(Tid[i])
        until (Tid[i]<>'') and (verif(i,N,Tid));
```

```
OU repeat
            Write(i,' : ');
            Saisieid(Tid[i])
       until verif(i,N,Tid); }
```

```
Writeln;
    Writeln('Remplir Tpw');
    For i:=1 to N do
        begin
          Write(i,' : ');
          Saisiepw(Tpw[i]);
        end;
end;

Procedure Affiche(N:integer ; T:tab);
Var  i:integer;
begin
  For i:=1 to N do
    write (T[i],'    ');
  writeln;
  writeln;
end;

Function exist(mot:st ; n:integer ; T:tab) : boolean;
Var    i:integer;
begin
   i:=1;
  While (t[i]<>mot) and (i<=n) do
    inc(i);
  exist:=i<=n;
end;

Procedure Acces(N:integer ; Tid,Tpw:Tab ; id,pw:st) ;
begin
     If exist(id,n,Tid) and exist (pw,n,Tpw) then
      Write(id,' Bienvenue sur notre site')
        else  Write('Verifiez votre identificateur et/ou votre mot de passe !') ;
end;

BEGIN
   Remplir(N,Tid,Tpw);
   Writeln;
   Affiche(N,Tid); { Non demandé }
   Affiche(N,Tpw);
   Saisieid(id);
   Saisiepw(pw);
   Writeln;
   Acces(N,Tid,Tpw,id,pw);
END.
```

```
Program Port_Bonheur_14H_Suj2;
Uses wincrt;
Var N,P:integer;

Procedure saisie(var N,P:integer);
Begin
     repeat
       write('N et P : ');readln(n,p);
     until (n in [4..19]) and (p in [1..10]);
End;

Function concatener(n,p:integer):string;
Var    i,j:integer;
       ch:string;
begin
  ch:=''; randomize;
   For i:=1 to n do
     begin
      For j:=1 to p do
       ch:=ch+chr(random(26)+65);
     ch:=ch+'/'; {pour séparer les chaines dans l'affichage : dans tous les cas l'affichage n'est
pas demandé}
     end;
     Writeln(ch);
  concatener:= ch;
end;

Function Compter(ch:string ; c:char):integer;
Var    i,nb:integer;
begin
  nb:=0;
  For i:=1 to length(ch) do
   If ch[i] = c then
    inc(nb);
  compter:=nb;
end ;

Function max(ch:string):integer;
Var    i,mx:integer;
       c:char;
begin
  mx:=compter(ch,ch[1]);
  For i:=2 to length(ch) do
    If (ch[i]<>'/')and (compter(ch,ch[i])> mx) then
    {'/' existe déja dans la chaine et peut être dominant !! }
     mx:=compter(ch,ch[i]);
  max:=mx;
end ;
```

```
Function Lettr_Bonheur(ch:string):string;
Var  i:integer;
     ch1:string ;
begin
    ch1:='';
    Writeln('Le(s) lettres porte-bonheur sont :');
    For i:=1 to length(ch) do
       IF (ch[i]<>'/') and (compter(ch,ch[i])=max(ch)) and (pos(ch[i],ch1)=0) then
        {pos pour éliminer redondance de mm caractère dans l'affichage}
        ch1:=ch1+ch[i]+'/' ;
    Lettr_Bonheur:=ch1;
end;

BEGIN
 Saisie(N,P);
 Writeln(Lettr_Bonheur(Concatener(N,P)));
END.
```

```
Program Jeu_Tcash_14H_Suj4;
Uses wincrt;
Var num : string ;
Procedure compose(var ch:string);
Var  ch1,ch2:string ;
Begin
     randomize;
     str(random(9000) + 1000,ch1) ;
     str(random(9000) + 1000,ch2) ;
     ch:=concat(ch1,ch2);
End;

Procedure Former(ch:string ; var ch1:string ; c:char);
Var    i:integer;
begin
  For i:=1 to length(ch) do
   If ch[i] = c then
    ch1[i] := c ;
end ;

Procedure jeu(num:string);
Var  nb:integer;
     num1:string ;
     c,rep:char ;
     ok:boolean ;
begin
    nb:=0;
    num1:='--------';
    writeln(num) ;  {pour tester !}
    Repeat
     repeat
      write('Proposer un chiffre ?');readln(c);
     until c in ['0'..'9'];
     nb:=nb+1;
     former(num,num1,c);
     ok:=num=num1;
     if not ok then
     begin
      writeln('Le numéro de téléphone est : ',num1);
      repeat
        write('Voulez-vous proposer un numéro ? ');readln(rep);
      until upcase(rep) In ['O','N'] ;
      If upcase(rep)='O' then
        repeat
         write('Proposer un numéro : ');readln(num1);
        until (length(num1)=8) and (num1[1]<>'0');
      ok:=num=num1;
     end;
   Until (upcase(rep)='O') or (nb=5) or ok ;
   If ok then
    write('Bravo ! Vous avez gagné')
     else write('Désolé ! Vous avez perdu');
end;
```

```
BEGIN
 Compose(num);
 Jeu(num);
END.
```

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```
Program Cryptage_8h_S1;
Uses Wincrt;
Const p=17;
      q=19;
      e=5;
Type  Tab=array [1..20] of longint ;
Var
 msg:string;
 T:Tab;
 N:Byte;

Procedure saisi_msg(var msg:string);
Var i,l:integer;
    x:boolean;
Begin
  repeat
   x:=false;
   write('Message à crypter : ');  readln(msg);
   l:=length(msg);
   if l=0 then
      x:=false
      else
       begin
        i:=1;
        While (upcase(msg[i]) in ['A'..'Z']) and (i<=length(msg)) do
          i:=i+1;
        If i>l Then x:=true;
       end;
  until x;
end;

Procedure Remplir(Var T:tab ; msg:string ; var l:byte);
Var i,c,o:byte;
Begin
     l:=length(msg) ;
     for i := 1 to l do
      begin
        c:=ord(msg[i]);
        If c<=90 then o:=c-64
         else o:=c-96;
        T[i]:=o;
      end;
End;
```

```
Function puiss(n:byte):longint;
var
  i:byte;
  p:longint;
begin
   p:=1;
   for i :=1 to e do
     p:=p*n;
puiss:=p
end;
Procedure Crypt(Var T:tab ; n:byte);
var
  i:byte;
begin
   for i :=1 to n do
    T[i]:=puiss(T[i]) mod (p*q) ;
end;

Procedure Affich (T:tab ; n:byte);
var
  i:byte;
begin
   for i :=1 to n do
    Write(T[i]:6);
end;

BEGIN
 Saisi_msg(msg);
 Remplir(T,msg,N);
 Crypt(T,N);
 Affich(T,N);
END.
```

```
Program Cryptage_8h_S2;
Uses Wincrt;
Var
 msg,cl:string;

Procedure saisi_msg(var msg:string);
Var i:integer;
    x:boolean;
Begin
  repeat
   x:=false;
   write('Message à crypter : ');  readln(msg);
   i:=1;
   While (msg[i] in ['A'..'Z' , ' ']) and (i<=length(msg)) do
     i:=i+1;
   If i>length(msg) Then x:=true;
  until x;
end;

Procedure saisi_cle(var chcl:string;msg:string);
Var i,l:integer;
    x:boolean;
Begin
  repeat
    x:=false;
    write('Clé de cryptage : ');  readln(cl); { val non fonctionnelle MAX longint : 2147483647 }
    i:=1; l:=length(cl);
    While (cl[i] in ['0'..'9']) and (i<=l) do
     i:=i+1;
   If i>l Then x:=true;
  until x and (length(msg)=l) ;
end;

Function Crypter(msg,cle:string):string;
var
  i,j,k,e,c:integer;
  ch:string;
begin
  ch:='';
  for k :=1 to length(msg) do
   begin
    if msg[k]=' ' then
      ch:=ch+' '
       else
        begin
         val(cle[k],c,e);
         i:=ord(msg[k])-64;
         j:=c+i;
         If j>26 then j:=j mod 26 { ou j:=c-(26-i) };
         ch:=ch+chr(j+64);
        end ;
    end;
   Crypter:=ch;
end;
```

```
BEGIN
 Saisi_msg(msg);
 Saisi_cle(cl,msg);
 Writeln(Crypter(msg,cl));
END.
```

```
Program Cryptage_8h_S3;
Uses Wincrt;
Var
 msg,cl:string;

Procedure saisi_msg(var msg:string);
Var i:integer;
    x:boolean;
Begin
  repeat
   x:=false;
   write('Message à crypter : ');  readln(msg);
   i:=1;
   While (msg[i] in ['a'..'z' , ' ']) and (i<=length(msg)) do
     i:=i+1;
   If i>length(msg) Then x:=true;
  until x;
end;

Procedure saisi_cle(var chcl:string;msg:string);
Var i,l:integer;
    x:boolean;
Begin
  repeat
    x:=false;
    write('Clé de cryptage : ');  readln(cl);
    i:=1; l:=length(cl);
    While (cl[i] in ['a'..'z']) and (i<=l) do
     i:=i+1;
   If i>l Then x:=true;
  until x and (length(msg)=l) ;
end;

Function Crypter(msg,cle:string):string;
var
  i,j,k:integer;
  ch:string;
begin
  ch:='';
  for i :=1 to length(msg) do
   begin
    if msg[i]=' ' then
      ch:=ch+' '
      else
       begin
        j:=ord(msg[i])-96;
        k:=abs(ord(msg[i])-ord(cle[i]))+1;
        ch:=ch+chr(k+96);
       end ;
    end;
   Crypter:=ch;
end;
```

```
BEGIN
 Saisi_msg(msg);
 Saisi_cle(cl,msg);
 Writeln(Crypter(msg,cl));
END.
```

```
Program Cryptage_8h_S4;
Uses Wincrt;
Var
 msg:string;

Procedure saisi_msg(var msg:string);
Var i,l:integer;
    x:boolean;
Begin
  repeat
   x:=false;
   write('Message à crypter : ');  readln(msg);
   l:=length(msg);
   if l=0 then
      x:=false
      else
       begin
        i:=1;
        While (upcase(msg[i]) in ['A'..'Z' , ' ']) and (i<=length(msg)) do
          i:=i+1;
        If i>l Then x:=true;
       end;
  until x;
end;

Function Crypter(msg:string):string;
var
  i,s,n:integer;
  ch:string;
begin
   ch:='';
   for i :=1 to length(msg) do
    begin
     n:=ord(msg[i]);
     Repeat
       s:=0;
      Repeat
        s:=s+n mod 10;
        n:=n div 10;
      Until n=0;
      n:=s;
     Until n in [1..9];
        if msg[i]=' ' then
      ch:=ch+' '
       else
         ch:=ch+chr(n+random(18)+64);
     end;
   Crypter:=ch;
end;

BEGIN
 Saisi_msg(msg);
 Writeln(Crypter(msg));
END.
```

```
Program Sejour_9h30_S1;
Uses wincrt;
Type  Tab=array [1..100] of word ;
Var T:Tab;
   N:Byte;
Procedure saisie(var n:Byte;Var T:tab);
Var i:byte;
   ch:string;
Begin
    repeat
      write(' Donnez le nombre de réservations : ');
      readln(n);
    until( n in  [2..100]);
    for i := 1 to n do
      repeat
       write (' T[',i,']= ');
       readln(t[i]);
       str(t[i],ch);
      until length(ch)=4;
End;
Function premier(n:word):boolean;
var i:word;
begin
 If n<=1 then premier:=false { sinon si le numéro contient le chiffre 0 ou 1 : il va être considéré comme
premier ! }
  else
   begin
    i:=2;
    While (i<= n div 2) and (n mod i <>0) do
     i:=i+1;;
    premier:=i> n div 2;
   end;
end;

Function compter_nb_premier(N:word):word;
Var i,nb,e,nc1,nc2,nc3,nc4:word;
   ch,c1,c2,c3,c4:string;
Begin
  nb:=0;
  str(n,ch);
  Repeat
    c1:=ch[1]; val(c1,nc1,e);
    c2:=copy(ch,1,2); if length(c2)=2 then val(c2,nc2,e) else nc2:=0;
    c3:=copy(ch,1,3); if length(c3)=3 then val(c3,nc3,e) else nc3:=0;
    c4:=copy(ch,1,4); if length(c4)=4 then val(c4,nc4,e) else nc4:=0;
    If premier(nc1) then nb:=nb+1;
    If premier(nc2) then nb:=nb+1;
    If premier(nc3) then nb:=nb+1;
    If premier(nc4) then nb:=nb+1;
    delete(ch,1,1);
  Until ch='';
  compter_nb_premier:=nb;
End;
```

```
Function maxi(T:tab;N:byte):byte;
Var i:integer;
    max:byte;
Begin
   max := compter_nb_premier(T[1]);
   for i:= 2 to N do
    begin
      If compter_nb_premier(T[i]) > max then
      max := compter_nb_premier(T[i]);
    end;
   maxi:=max;
End;

Procedure Affiche (T:tab;N:byte);
Var  i,mx:integer;
Begin
 mx:=maxi(T,N); writeln(mx);
 writeln('Les numéros de réservation des résidents gagnants sont : ');
 for i:=1 to n do
   if compter_nb_premier(T[i])=mx then
         writeln(T[i]:4);
End;

BEGIN
 Saisie(N,T);
 Affiche(T,N);
END.
```

```
Program decomposition_9h30_S3;
Uses wincrt;
Type  Tab=array [1..10] of integer ;
Var T:Tab;
   N,i:Byte;

Procedure saisie(var n:Byte;Var T:tab);
Var i:byte;
   ch:string;
Begin
    repeat
      write('Taille : ');readln(n);
    until n in [1..9];
    for i := 1 to n do
       repeat
        write (' T[',i,']= ');
        readln(t[i]);
        str(t[i],ch);
       until (length(ch) in[2..3]) and (T[i]>0);
End;

Procedure remplir(n:integer ; Var TF:tab; Var k: integer);
Var    i:integer;
begin
  k:=0;
  i:=2;
  repeat
   If n mod i = 0 then
    begin
      k:= k + 1;
      TF[k] := i;
      n := n div i;
    end
    else
      i := i + 1;
  until n=1;
end;

Function Compter(T:Tab ; N:integer):boolean;
Var i,nb,j,x:integer ;
Begin
 i:=1;
 If N=1 then compter:=false
  else
  begin
   repeat
    x:=T[i];
    nb:=1; j:=i+1;
```

```
   While (nb<2) and (j<=n) do
     begin
      If T[j]=x then
       inc(nb);
      inc(j);
     end;
    inc(i);
  until(nb=2) or(i=n);
  compter:= nb=2;
 end;
End;

Procedure affiche(N:integer ; T:tab);
Var  i,j,k:integer;
  TF:Tab;
begin
 For i:=1 to N do
  begin
   Remplir(T[i],TF,K);
   If compter(TF,K) then
     writeln (T[i]:6);
  end;
end;

BEGIN
 Saisie(N,T);
 Affiche(N,T);
END.
```