1 Code bibinaire

```
>   bine:=proc(n)
>   local q,L,B,k;
>   q:=iquo(n,2);
>   L:=irem(n,2);
>   while q>0 do
>   L:=L,irem(q,2);
>   q:=iquo(q,2);
>   od;
>   #L:=[L];
>   #B:=NULL;
>   #for k to nops(L) do B:=B,L[-k];od;
>   #[B];
>   [L];
>   end:
>   bibine:=proc(n)
>   local bi,ib,bibi,k;
>   ib:=bine(n);
>   while evalb(irem(nops(ib),4)=0)=false do ib:=[(op(ib),0)]; od;
>   bibi:=NULL;
>   for k from 1 to nops(ib) by 4 do
>   if evalb(ib[k..k+1]=[0,0])=true then bibi:=bibi,O;
>   else if evalb(ib[k..k+1]=[1,0])=true then bibi:=bibi,A;
>   else if evalb(ib[k..k+1]=[0,1])=true then bibi:=bibi,E;
>   else  bibi:=bibi,I;
>   fi;
>   fi;
>   fi;
>   if evalb(ib[k+2..k+3]=[0,0])=true then bibi:=bibi,H;
>   else if evalb(ib[k+2..k+3]=[1,0])=true then bibi:=bibi,B;
>   else if evalb(ib[k+2..k+3]=[0,1])=true then bibi:=bibi,K;
>   else  bibi:=bibi,D;
>   fi;
>   fi;
>   fi;
>   od;
>   bi:=seq(ib[-k],k=1..nops(ib));
>   bibi:=seq(bibi[-k],k=1..nops([bibi]));
>   [bibi];
>   end:


>   bine(0);


    [0]


>   bibine(2751);


                                                            [K,
E, K, I, D, I]
>   bibine(1177);


                                                            [B,
O, K, A, K, A]
>   decod=table([seq(bibine(k)=k,k=0..15)]):
>   enibib:=proc(L)
>   local N,k;
>   N:=0;
>   for k from 1 to nops(L)-1 by 2 do
>   N:=N+decod[L[k..k+1]]*16^((nops(L)-(k-1))/2-1);
>   od;
>   N;
>   end:


>   enibib([K,E,K,I,D,I]);


                                2751
>   enibib([B,O,K,A,K,A]);


                                1177
```

```
>  enibib(bibine(123456));
```

$$123456$$

```
>  bibine(enibib([K,E,B,O,K,A,D,O]));
```

$$[K, E, B, O, K, A, D, O]$$

```
>  L:=[1,2,3]:
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2   Groupes finis

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>  ordre:=proc(k,U)
>  local j;
>  j:=1;
>  while evalc((U[k])^j)<>1 do
>  j:=j+1:
>  od;
>  j;
>  end:

>  GroupeFini:=proc(n)
>  local U,A,T,k,i,j,o,x;
>  U:=[seq(exp(2*I*k*Pi/n),k=0..n-1)]:
>  A:=[seq([seq(evalc(U[i]*U[j]),j=1..n)],i=1..n)]:
>  T:=convert(A,array):
>  o:=seq(ordre(x,U),x=1..n);
>  print(U);
>  print(o);
>  print(T);
>  end:

>  GroupeFini(3);
```

$$\left[1, -\frac{1}{2} + \frac{1}{2}I\sqrt{3}, -\frac{1}{2} - \frac{1}{2}I\sqrt{3}\right]$$

$$1, 3, 3$$

$$\begin{bmatrix} 1 & -\frac{1}{2} + \frac{1}{2}I\sqrt{3} & -\frac{1}{2} - \frac{1}{2}I\sqrt{3} \\ -\frac{1}{2} + \frac{1}{2}I\sqrt{3} & -\frac{1}{2} - \frac{1}{2}I\sqrt{3} & 1 \\ -\frac{1}{2} - \frac{1}{2}I\sqrt{3} & 1 & -\frac{1}{2} + \frac{1}{2}I\sqrt{3} \end{bmatrix}$$