```c
void FFT1( int *A, int n, int *W, int p, int *T )
{
   int i,n2,t;
   if( n==1 ) return;
   n2 = n/2;

   for( i=0; i<n2; i++ ) {
      T[   i] = A[2*i];
      T[n2+i] = A[2*i+1];
   }

   FFT1( T,    n2, W+n2, p, A );
   FFT1( T+n2, n2, W+n2, p, A+n2 );


   for( i=0; i<n2; i++ ) {
      t = mulmod(W[i],T[n2+i],p);
      A[   i] = addmod(T[i],t,p);
      A[n2+i] = submod(T[i],t,p);
   }
   return;
}


void FFT2( int *A, int n, int *W, int p, int *T )
{
   int i,n2,t;
   if( n==1 ) return;
   n2 = n/2;

   for( i=0; i<n2; i++ ) {
      T[i] = addmod(A[i],A[n2+i],p);
      t = submod(A[i],A[n2+i],p);
      T[n2+i] = mulmod(t,W[i],p);
   }

   FFT2( T,    n2, W+n2, p, A    );
   FFT2( T+n2, n2, W+n2, p, A+n2 );

   for( i=0; i<n2; i++ ) {
      A[  2*i] = T[i];
      A[2*i+1] = T[n2+i];
   }
   return;
}
```