TRIE BIT

C++	Pascal

struct Tnode{
  int cnt;
  int next[2];
};
	Type Tnod=record
	  cnt: longint;
	  next: array[0..1] of longint;
	  end;

Tnode Tree[maxT];	Tree: array[0..maxT] of Tnode;

int AddNode() {
  ++nT;
  Tree[nT].cnt=
  Tree[nT].next[0]=
  Tree[nT].next[1]=0;
  return nT;
}
	function AddNode: longint;
	begin
	  inc(nT);
	  with Tree[nT] do begin cnt:=0;
	  next[0]:=0; next[1]:=0;
	  end;
	  exit(nT);
	end;

void Them(int x) {
  int r=0;
  for(int k=maxk;k>=0;k--) {
  int i=(x>>k) & 1;
  if (Tree[r].next[i]==0)
  Tree[r].next[i]=AddNode();
  Tree[r].cnt++;
  r=Tree[r].next[i];
  }
  Tree[r].cnt++;
}
	procedure Them(x: longint);
	begin
	  r=0;
	  for k:=maxk downto 0 do begin
	  i:=(x shr k) and 1;
	  if (Tree[r].next[i]=0) then
	  Tree[r].next[i]:=Addnode;
	  inc(Tree[r].cnt);
	  r:=Tree[r].next[i];
	  end;
	  inc(Tree[r].cnt);
	end;

void Bot(int x) {
  int r=0;
  for(int k=maxk;k>=0;k--) {
  int i=(x>>k) & 1;
  Tree[r].cnt--;
  r=Tree[r].next[i];
  }
  Tree[r].cnt--;
}
	procedure Bot(x: longint);
	begin
	  r=0;
	  for k:=maxk downto 0 do begin
	  i:=(x shr k) and 1;
	  dec(Tree[r].next[i]);
	  r=Tree[r].next[i];
	  end;
	  dec(Tree[r].cnt);
	end;

int rank(int x {
  int r=0; kq=1;
  for(int k=maxk;k>=0;k--) {
  int i=(x>>k) & 1;
  if (Tree[r].next[i]==0)
  return 0;
  if (i==1 && Tree[r].next[0])
  kq+=
  Tree[Tree[r].next[0]].cnt;
  }
  return kq;
}
	function rank(x: longint): longint;
	begin
	  r=0; kq:=1;
	  for k:=maxk downto 0 do begin
	  i:=(x shr k) and 1;
	  if (Tree[r].next[i]=0) then exit(0);
	  if (i=1) and (Tree[r].next[0]<>0) then
	  inc(kq,Tree[Tree[r].next[0]].cnt);
	  end;
	  return kq;
	end;