```pascal
program HeapSort240616;

{
*
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*
}

const
  MAX = 10;

type
  Tgiven  = integer;
  Tvector = array[0..MAX] of Tgiven;

var
  vector : Tvector;

procedure auto(var vector:Tvector);
var
  i : integer;
begin
  for i := 0 to MAX-1 do
  begin
    vector[i]:=random(150);
  end;
end;

procedure display( vector: Tvector );
var
  i: integer;
begin
   writeln;
   write('=>   | ');
   for i := 0 to MAX-1 do write(vector[i],' | ');
   writeln;
end;

procedure swap( var a, b: integer );
var
  temp: integer;
begin
  temp := a;
  a := b;
  b := temp;
end;

procedure sink( var vector : Tvector; start, last: integer );
var
  root, child: integer;
begin
  root := start;
  while ( root * 2 + 1 <= last ) do begin
  child := root * 2 + 1;
  if ( child < last ) and ( vector[child] < vector[child + 1] ) then
    child := child + 1;
  if ( vector[root] < vector[child] ) then begin
    swap ( vector[root], vector[child] );
    root := child;
  end else
    break;
  end;
end;

procedure heighten( var vector : Tvector; count: integer );
var
  start: integer;
begin
  start := (count - 1) div 2;
  while ( start >= 0 ) do
  begin
    sink (vector, start, count-1);
    start := start - 1;
```

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      end;
   end;

   procedure heapSort( var vector : Tvector; lastVector:integer );
   var
     last : integer;
   begin
     heighten(vector, MAX );
     last := MAX - 1;
     writeln;
     writeln('Heap');
     display(vector);
     while ( last > 0 ) do
     begin
       swap(vector[last], vector[0]);
       last := last - 1;
       sink(vector, 0, last);
     end;
   end;

   //program
   begin
      writeln;
     auto(vector);
     writeln('Original Vector');
     display(vector);
     heapSort (vector, MAX);
     writeln;
     writeln('Sorted Vector');
     display(vector);
   end.
```