Day 8 - Tree encoding

Read the data

```
In[32]:= SetDirectory[NotebookDirectory[]];
```

```
In[33]:= (in = StringSplit[ReadList["input.txt", String][[1]]] // ToExpression) ~ Take ~ 10
```
```
Out[33]= {7, 11, 7, 2, 4, 5, 3, 4, 1, 5}
```

```
In[34]:= ex = StringSplit["2 3 0 3 10 11 12 1 1 0 1 99 2 1 1 2"] // ToExpression
```
```
Out[34]= {2, 3, 0, 3, 10, 11, 12, 1, 1, 0, 1, 99, 2, 1, 1, 2}
```

```
In[35]:= data = in;
```

```
In[36]:= consume[data_, n_] := {Take[data, n], Drop[data, n]}

      readNode[data_] := Module[{node, cc, mc, m, d, n},
        {{cc, mc}, d} = consume[data, 2];
        node = <|
          "children" → Table[({n, d} = readNode[d]; n), {cc}],
          "meta" → ({m, d} = consume[d, mc]; m)|>;
        {node, d}
      ]
```

```
In[38]:= {n, d} = readNode[data];
```

Part 1

```
In[39]:= traverse[n_] := Module[{},
        Sow[n["meta"]];
        Do[traverse[c], {c, n["children"]}]
      ]
```

```
In[40]:= meta = Reap[traverse[n]][[2]] // Flatten;
```

```
In[41]:= Plus @@ meta
```
```
Out[41]= 36 627
```

Part 2

In[42]:=
```
reference[n_, k_] := If[
    k > Length[n["children"]],
    0,
    value[n["children"][[k]]]
  ]
```

In[43]:=
```
value[n_] := If[
    Length[n["children"]] == 0,
    Plus @@ n["meta"],
    Sum[reference[n, k], {k, n["meta"]}]
  ]
```

In[44]:=
```
value[n]
```

Out[44]= 16 695