Morse task 9

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1 Introduction

In this task I created a program that can encode and decode messages in Morse code. Under section Encode the encoding code is listed, under section Decode the decoding code is listed and under section Screenshot a screenshot can be viewed showing that the program works.

2 Encode

```
def encode_table({:node, :na, left, right}, map, path) do
  encode_table(right, encode_table(left, map, path <> "-"), path <> ".")
end
def encode_table({:node, char, :nil, :nil}, map, path) do
  Map.put(map, [char], path)
end
def encode_table({:node, char, left, :nil}, map, path) do
  Map.put(encode_table(left, map, path <> "-"), [char], path)
end
def encode_table({:node, char, :nil, right}, map, path) do
  Map.put(encode_table(right, map, path <> "."), [char], path)
end
def encode_table({:node, char, left, right}, map, path) do
  lmap = encode_table(left, map, path <> "-")
  rmap = encode_table(right, lmap, path <> ".")
  Map.put(rmap, [char], path)
end
def encode_table(_, map, _) do map end

def encode(text)do
  tree = morse()
  table = encode_table(tree, %{}, "")
  encode(table, String.to_charlist(text), [])
end
```

```elixir
def encode(table, [head | tail], result) do
  encode(table, tail, [Map.get(table, [head]) <> " " | result])
end
def encode(_, [], result) do
  unpack(result, "")
end

def unpack([], sofar) do sofar end
def unpack([c | rest], sofar) do
  unpack(rest, c <> sofar)
end
```

3   Decode

```elixir
def decode(morse) do
  table = morse()
  morse = String.split(morse)
  decode(morse, table)
end

def decode([], _) do [] end
def decode([head|tail], table) do
  [decode_chars(String.codepoints(head), table) | decode(tail, table)]
end

def decode_chars([], {:node, char, _, _}) do char end
def decode_chars(["-"|tail], {:node, _, left, _}) do
  decode_chars(tail, left)
end
def decode_chars(["."|tail], {:node, _, _, right}) do
 decode_chars(tail, right)
end
```

4   Screenshot

```
iex(10)> Morse.start
'all your base are belong to us'
iex(11)> Morse.start1
'https://www.youtube.com/watch?v=d%51w4w9%57g%58c%51'
iex(12)> msg = "all your base are belong to us"
"all your base are belong to us"
iex(13)> Morse.encode(msg)
".- .-.. .-.. ..-- -.-- --- ..- .-. ..-- -... .- ... . ..-- .- .-. . ..-- -... . .-.. --- -. --. ..-- - --- ..-- ..- ... "
iex(14)> []
```

Figure 1: Caption