

1. Write a scheme procedure `reverse` that takes a nonnegative integer n as argument and returns a number whose digits are the reverse of the digits of n . For example,

`(reverse 207)` returns 702

`(reverse 1239)` returns 9321

Does your procedure generate a recursive or iterative process? Justify your answer. Give a trace of `(reverse 1239)`.

2. Write a scheme procedure `even-digits-number-of` that takes a nonnegative integer n as argument and returns a number whose digits are the digits of n at even positions, in order. For example

`(even-digits-number-of 207)` returns 27

`(even-digits-number-of 51239)` returns 529

Does your procedure generate a recursive or iterative process? Justify your answer. Give a trace of `(even-digits-number-of 51239)`.

3. Write a scheme procedure `odd-digits-number-of` that takes a nonnegative integer n as argument and returns a number whose digits are the digits of n at odd positions, in order. For example

`(odd-digits-number-of 207)` returns 0

`(odd-digits-number-of 51239)` returns 13

Does your procedure generate a recursive or iterative process? Justify your answer. Give a trace of `(odd-digits-number-of 51239)`.

4. Write a scheme procedure `combine` that takes two nonnegative integers `odd-digits-number` and `even-digits-number` as arguments and returns a number whose digits are constructed as follows: its digits at odd positions come from `odd-digits-number`, in order, and its digits at even positions come from `even-digits-number`, in order. For example,

`(combine 12 4)` returns 1024

`(combine 12 34)` returns 1324

`(combine 123 987654)` returns 90807162534

Does your procedure generate a recursive or iterative process? Justify your answer. Give a trace of `(combine 123 7654)`.