

Question 1 (25%)

Write a program that takes a sequence, a start index, an end index and returns the sub-sequence from start to (and including) end. Indices start from 0. Here is an example interaction:

```
CL-USER> (foo '(a b c d e) 0 3)
(A B C D)
CL-USER> (foo '(a b c d e) 1 3)
(B C D)
CL-USER> (foo '(a b c d e) 1 6)
(B C D E)
CL-USER> (foo '(a b c d e) 5 6)
NIL
CL-USER> (foo '(a b c d e) 3 2)
NIL
```

Question 2 (25%)

Write a program that takes two parameters count and max, and returns a list of count random integers, all less than max.

Question 3 (25%)

Write a program that takes a list of integers as input and return the increasing subsequence with the largest sum. An increasing subsequence is such that every element of it is either the last element or is less than or equal to the element coming after it. Return the last found subsequence in case of equality.

Question 4 (25%)

Write a program that first generates a random integer list of size 100, prints it, and prints all of its increasing subsequences together with their sums.