

## **Task 1**

1. Do )CLEAR your workspace.
2. Give your workspace a )WSID.
3. Do )SAVE your workspace.
4. Turn Dyalog )OFF.
5. Start Dyalog and )LOAD your workspace.

## Task 2

Define a function NoSpace to remove spaces:

```
NoSpace 'here is some text'  
hereissometext
```

### Task 3

Define a function RemoveFrom to remove any character:


```
'l' RemoveFrom 'hello world'
heo word
```

```
'o' RemoveFrom 'hello world'
hell wrld
```

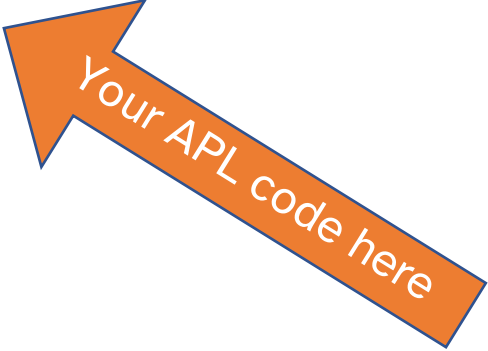
## Task 4

**Redefine** the function NoSpace using RemoveFrom:

```
NoSpace←{ ??? RemoveFrom ??? }
```



Your APL code here



Your APL code here

```
NoSpace 'hello world'  
helloworld
```

## **Task 5**

Save your workspace.

## Task 6

Define a function `Mean` to return the mean average of its argument:

```
Mean 3 1 4 1 5 9 2 6
```

```
3.875
```

```
Mean 4 1 2 5
```

```
3
```

```
Mean 6+10
```

```
11.5
```

When you're done, `) fns` should show something like this:

```
) fns
```

```
Mean
```

## Task 7

Define a function ID to return an  $\omega$  by  $\omega$  identity matrix:

ID 3

1	0	0
0	1	0
0	0	1

ID 5

1	0	0	0	0
0	1	0	0	0
0	0	1	0	0
0	0	0	1	0
0	0	0	0	1

## Task 8

Define a function `TimesRows` to multiply a matrix left argument and a vector right argument. For example:

```
mat ← 4 3 6 9 9 10 9 1 3 5 3 6 7 3  
vec ← 1 0 -1
```

```
mat TimesRows vec  
6 0 -9  
10 0 -1  
3 0 -3  
6 0 -3
```



## Task 9

Using the Residue function (`|`), define a function `Multiples` to return only elements of the vector  $w$  that are exact multiples of  $\alpha$ .

```
7 Multiples 6 12 14 8 21 42 56 97 13
14 21 42 56
```

```
3 Multiples 6 9 9 10 9 1 3 5 3 6 7 3
6 9 9 9 3 3 6 3
```

```
10 Multiples 7 9 13    a empty vector result
```

## Task 10

Define a function `RemoveEvery` to remove every  $\omega^{\text{th}}$  number from the vector  $\alpha$ :

(i10) RemoveEvery 4

1 2 3 5 6 7 9 10

(i15) RemoveEvery 3

1 2 4 5 7 8 10 11 13 14

6 2 9 4 1 2 6 RemoveEvery 2

6 9 1 6

## Task 11

Define a function `Extend` which catenates the integer  $\alpha$  and the next  $\omega$  integers.

```
      10 Extend 3  
10 11 12 13
```

```
      -3 Extend 5  
-3 -2 -1 0 1 2
```

```
     -10 Extend 6  
-10 -9 -8 -7 -6 -5 -4
```

## Task 12

Using the `Extend` function you wrote, define a function `To` which produces integers from  $\alpha$  to  $\omega$  inclusive.

1 To 5  
1 2 3 4 5

10 To 15  
10 11 12 13 14 15

-3 To 5  
-3 -2 -1 0 1 2 3 4 5

-10 To -6  
-10 -9 -8 -7 -6

### Task 13

Define these variables that we'll use in the next few tasks:

```
names ← 6 7p 'Rich' Pav Hardeep Adam Sally Rodrigo'
```

Rich  
Pav  
Hardeep  
Adam  
Sally  
Rodrigo

I've made the spaces shaded so  
you can see how many there are

```
items ← 7 5p 'apple cat dog lemur frog safe lemon'
```

apple  
cat  
dog  
lemur  
frog  
safe  
lemon

## Task 14

Define a function ThatHave to select rows of a text matrix  $\alpha$  which contain the character  $\omega$ :

```
names ThatHave 'R'
```

```
Rich
```

```
Rodrigo
```

```
names ThatHave 'a'
```

```
Pav
```

```
Hardeep
```

```
Adam
```

```
Sally
```

```
names ThatHave 'x'  A zero-row matrix result!
```

## Task 15

Define a function `ThatBeginWith` to select rows of a text matrix  $\alpha$  which **begin with** the character  $\omega$ :

```
names ThatBeginWith 'R'
```

Rich

Rodrigo

```
names ThatBeginWith 'A'
```

Adam

```
names ThatBeginWith 'X'    a zero-row result!
```

## Task 16

Define a function `TextLengths` that takes a matrix  $w$  and counts how many non-spaces there are in each row.

```
TextLengths names
4 3 7 4 5 7
```

```
TextLengths items
5 3 3 5 4 4 5
```

```
TextLength 0 5ρ' '      A no rows; no lengths!
```



## Task 17

Using `TextLengths`, define a function `OfLength` to select rows of a text matrix  $\alpha$  where text (non-spaces) are of length  $\omega$ :

```
names OfLength 4
```

Rich

Adam

```
names OfLength 7
```

Hardeep

Rodrigo

```
items OfLength 5
```

apple

lemur

lemon

## Task 18

Define a function `RollN` that simulates rolling six-sided dice.  $\omega$  is the number of dice to roll. Then return the total:

```
RollN 3          a your result may vary!
```

11

```
RollN 3          a your result may vary!
```

10

```
RollN 1000       a your result may vary!
```

3548

```
[0.5+0.00001*+/RollN 1000000
```

35

## Task 19

Save your workspace

Email ***your\_name.dws*** to [workshops@dyalog.com](mailto:workshops@dyalog.com)

Make sure to put your name in the email so we know it is from you!