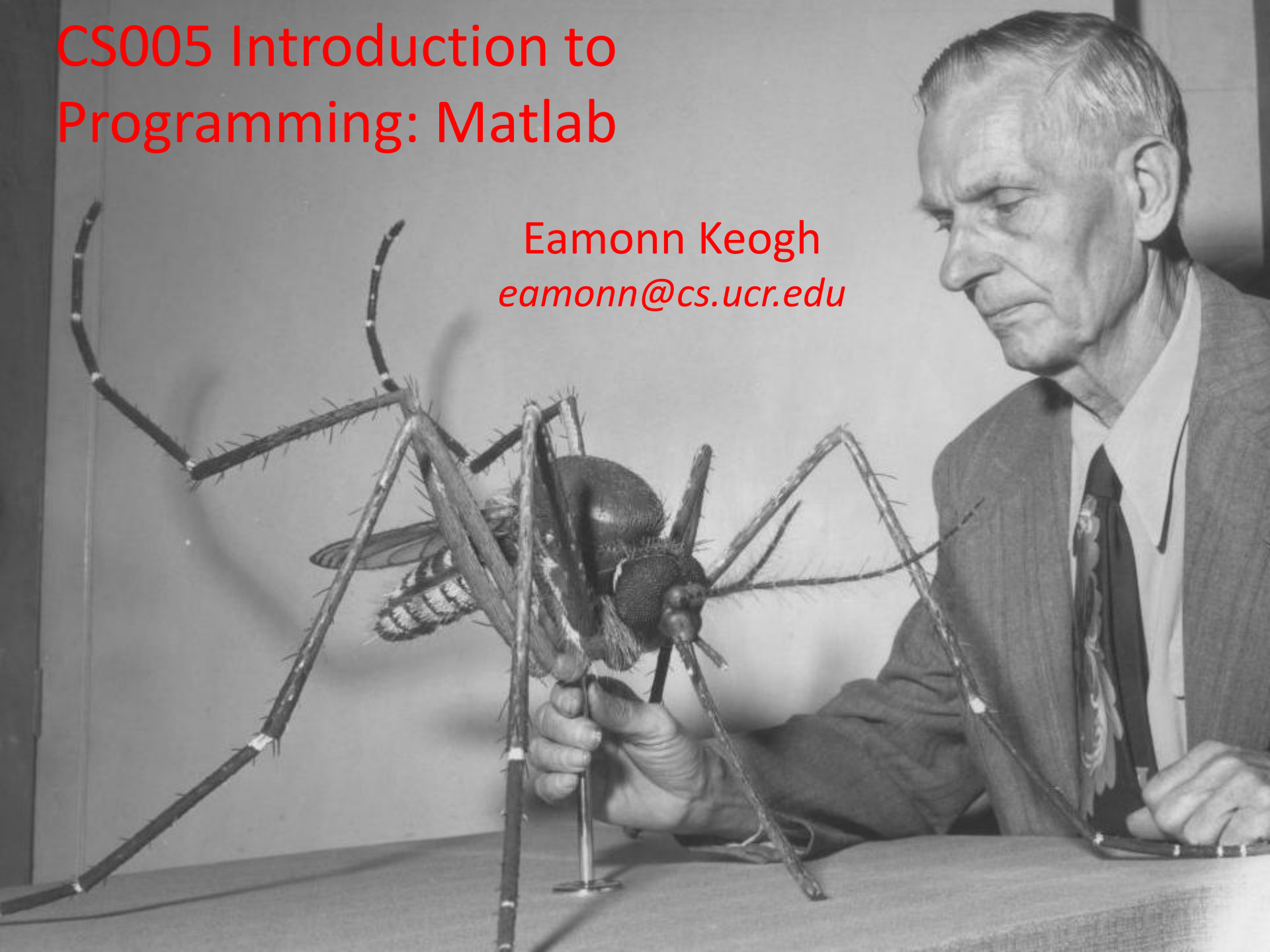


CS005 Introduction to Programming: Matlab

Eamonn Keogh
eamonn@cs.ucr.edu



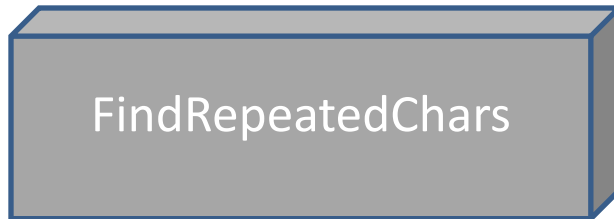
Write a function that searches a string for repeated, consecutive characters.

If there are non, return NaN, otherwise, return the index of the first letter of the first occurrence.

A

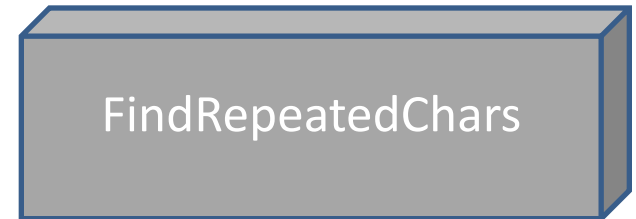
e	a	m	o	n	n
---	---	---	---	---	---

'abcdefg'



NaN

'eamonn'



5

```
function Repeated = FindRepeatedChars(A)
```

```
for i = 1 : length(A) - 1
```

```
    disp([A(i), A(i+1)])
```

```
end
```

A

e	a	m	o	n	n
---	---	---	---	---	---

```
EDU>> FindRepeatedChars('eamonn')
```

```
ea
```

```
am
```

```
mo
```

```
on
```

```
nn
```

```
function Repeated = FindRepeatedChars(A)
```

```
Repeated = NaN;
```

```
for i = 1 : length(A) - 1
```

```
    if A(i) == A(i+1)
```

```
        Repeated = i;
```

```
        break;
```

```
    end
```

```
end
```

A

e	a	m	o	n	n
---	---	---	---	---	---

```
EDU>> FindRepeatedChars('eamonn')
```

```
ans =
```

```
    5
```

```
EDU>>
```

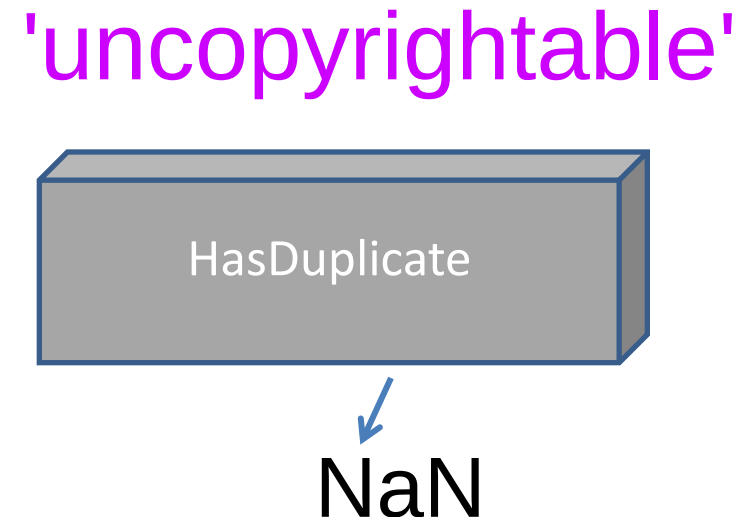
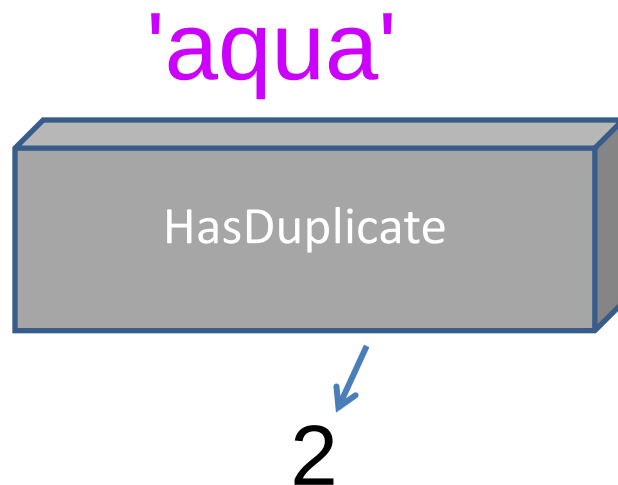
```
FindRepeatedChars('abababab')
```

```
ans =
```

```
NaN
```

Write a function that searches a string for duplicate characters, which may be non consecutive

If there are non, return NaN, otherwise, return the index of the first letter of the first occurrence.



Clever solution:

Sort the strings, then use the FindRepeatedChars function we just wrote!

```
EDU>> sort('uncopyrightable')  
ans =  
abceghilnoprtuy
```

```
EDU>> sort('aqua')  
ans =  
aaqu
```

```
function DuplicateLoc = HasDuplicate(A)
```

```
for i = 1 : length(A)  
    disp(A(i));  
end
```

```
>> HasDuplicate('aqua')
```

a

q

u

a

A

a	q	u	a
---	---	---	---

```
function DuplicateLoc = HasDuplicate(A)
```

```
for i = 1 : length(A)
```

```
    disp(A(i));
```

```
end
```

a	q	u	a
---	---	---	---

i loop
i is 1

a	q	u	a
---	---	---	---

i loop
i is 2

a	q	u	a
---	---	---	---

i loop
i is 3

a	q	u	a
---	---	---	---

i loop
i is 4

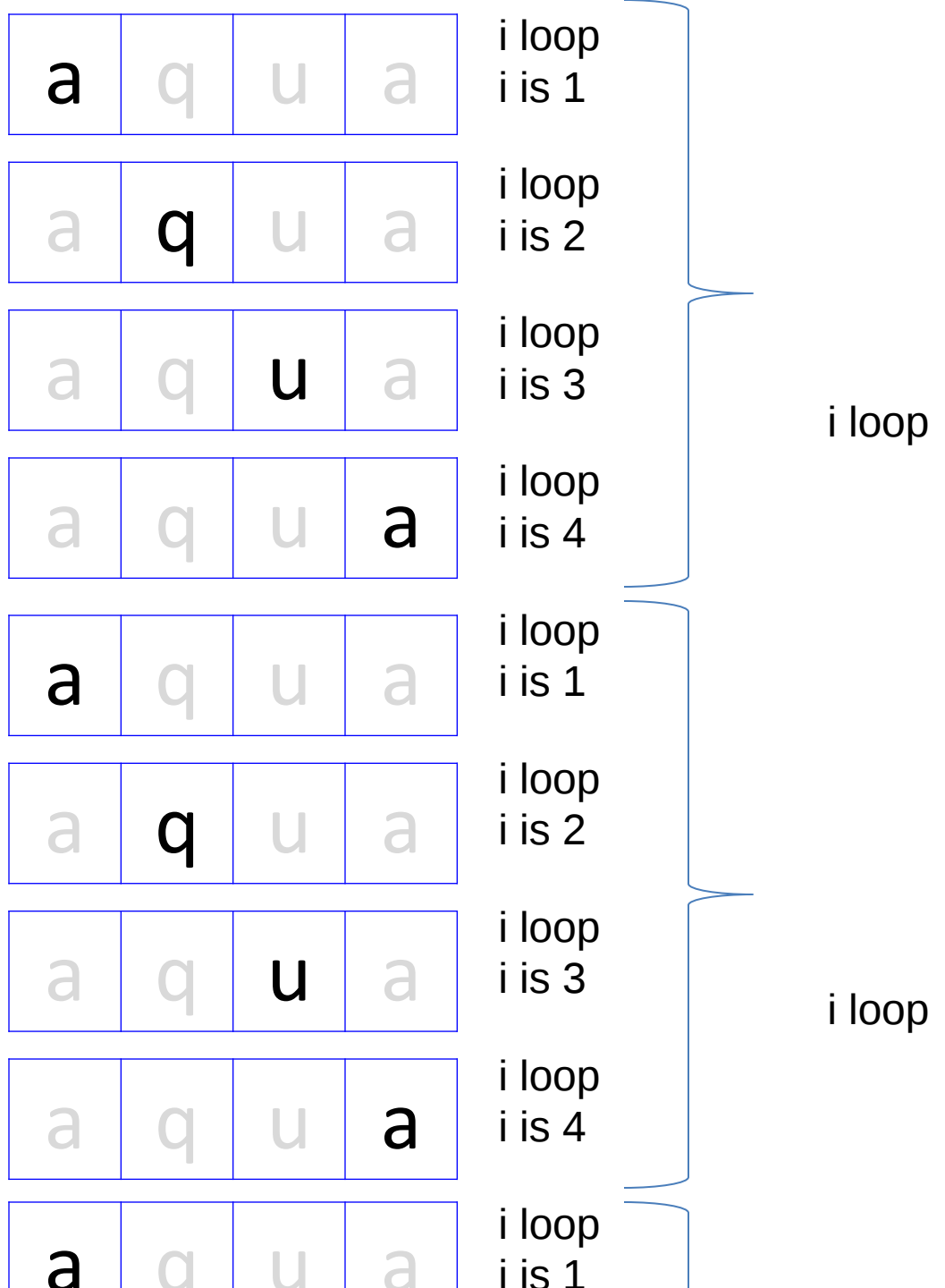
```
>> HasDuplicate('aqua')
```

a

q

u

a



k loop
k is 1

a

a

q

u

a

i loop
i is 1

k loop
k is 1

a

a

q

u

a

i loop
i is 2

k loop
k is 1

a

a

q

u

a

i loop
i is 3

k loop
k is 1

a

a

q

u

a

i loop
i is 4

k loop
k is 2

q

a

q

u

a

i loop
i is 1

k loop
k is 2

q

a

q

u

a

i loop
i is 2

k loop
k is 2

q

a

q

u

a

i loop
i is 3

k loop
k is 2

q

a

q

u

a

i loop
i is 4

k loop

u

a

q

u

a

i loop
i is 1

i loop

i loop

```
function DuplicateLoc = HasDuplicate(A)
```

```
for k = 1 : length(A)
    for i = 1 : length(A)
        disp( [A(i) A(k) ] );
    end
end
```

```
EDU>> HasDuplicate('aqua')
→ aa
  qa
  ua
  aa
  aq
→ qq
  uq
  aq
  au
  qu
→ uu
  au
  aa
  qa
  ua
→ aa
```

```
function DuplicateLoc = HasDuplicate(A)
```

```
for k = 1 : length(A)
```

```
    for i = 1 : length(A)
```

```
        if i ~=k
```

```
            disp([A(i) A(k) ]);
```

```
        else
```

```
            disp(['comparing with self ',A(i) A(k) ]);
```

```
        end
```

```
    end
```

```
end
```

```
EDU>> HasDuplicate('aqua')
```

```
comparing with self aa
```

```
qa
```

```
ua
```

```
aa
```

```
aq
```

```
comparing with self qq
```

```
uq
```

```
aq
```

```
au
```

```
qu
```

```
comparing with self uu
```

```
au
```

```
aa
```

```
qa
```

```
ua
```

```
comparing with self aa
```

```
function DuplicateLoc = HasDuplicate(A)
DuplicateLoc = NaN;
for k = 1 : length(A)
    for i = 1 : length(A)
        if i ~= k
            if A(i) == A(k)
                DuplicateLoc = i;
                break;
            end
        end
    end
end
end
```

```
EDU>> HasDuplicate('uncopyrightable')
ans =
    NaN
EDU>> HasDuplicate('aqua')
ans =
    1
```


End Game

- Review session on Wed, Lead by TA
 - Exam on Friday, During class time
 - Bring scantron, like last time
 - Lab on Friday afternoon
-
- Dr. Keogh will not be here from Wed morning till late Thursday. If you want office hours, get them before then, or ask the TA.