Summer Term 2016

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Computational Finance - Excercise Sheet 1

Exercise 1

(i) Write a MATLAB script `Square.m` that computes for `a = 2` and `b = 3` the size of the area of a square with side lengths `a` and `b`.

(ii) Initialize the variables `a` and `b` in the script and shift the area computation to a function `area.m` with input variable `a`, `b`.

(iii) Add a third variable `c` to your function input. If $c < 0$, compute the size of the square area, if $c > 0$, compute the volume of the cuboid with side lengths `a,b` and `c`, for $c = 0$ print a warning on the display and exit the function with value -100. Add `c` in your script and test your function.

(iv) Compute for $a = 2, b \in [0, 100], c = 2$ the corresponding function values and plot them (with correct x-axis and dots marking the computed values).

(v) If you used a `for`-loop before, get rid of it by vectorisation.

Exercise 2 Write down the output of the following short scripts (without using your computer!).

```
a=[1;2;3;4];
b=a+i*a;
```

```
A=[1 2 3; 4 5 6; 7 8 9];
i=find(A>5);
[r,c]=find(A>5);
```

```
x = 1;
while ( x <= 5 )
x = x + 1;
disp(['The value of x is:' , int2str(x)])
end
disp(['The last value of x is:' , int2str(x) ])
```

```
for k = 1:10
  if ( k == 7 ), break, end
  if ( k == 3), continue, end
  disp(['The value of k is:', int2str(k) ])
end
disp(['The last value of k is:' , int2str(k) ])
```

```
for k = 1:10
  switch ( k )
    case 1
      disp('The value of k is: 1' )
    case {2,3}
      disp('The value of k is: 2 or 3' )
    case{5}
      disp('The value of k is: 5' )
    otherwise
      disp('The value of k is neither 1 nor 2, 3 or 5.' )
  end
end
```

Exercise 3 Correct the code (without using your computer!).

```
1 function C=MatrixProdukt(A,B);
2   for i = 1:size(A,1)
3     for j = 1:size(B,2)
4       C(i,j) = C(i,j) + A(i,:) .* B(:,j);
5     end
6   end
7 end
```

Exercise 4 Write a function that reads in an integer $N > 0$ and then finds the first N primes.