1 Intro to Ruby

You can find many online resources for Ruby – this is a brief introduction to the basics about programming in ruby. We discuss three rather simple programs.

This program defines two variables, a and b and then sets their values to 100 and 21 respectively. Variables are just names for memory locations, and we can refer to the value inside a memory location by using the name of the variable.

The program then prints the values of the variables a and b and then computes various functions of these two values and prints them out.

```ruby
# scalar variables
a = 100
b = 21

print 'a is #{a}, b is #{b}
'

# arithmetic
s = a + b
d = a - b
p = a * b
q = a / b
m = a % b
e = a ** b

print 'sum (a+b) is #{s}
'
p
print 'diff (a-b) is #{d}
'
p
print 'product (a*b) is #{p}
'
p
print 'quotient (a/b) is #{q}
'
p
print 'mod (a%b) is #{m}
'
p
print 'exponent (a**b) is #{e}
'
p
```

This program prints out the squares of all numbers upto 24. The variable i has no meaning outside the loop. The command inside the { } is executed 25 times, starting from i = 0.

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The third program is the most interesting one since it makes decisions based on the input data. We have an array $A$, and we would like to find the index (position) of the largest element in the array. In other words, we would like the function `max` return the index `bigindex` such that $A[bigindex] \geq A[i]$ for all $i$.

Notice that in the very first iteration, nothing happens since we compare $A[0]$ and $A[0]$. In the second iteration when $i=1$ then we compare $A[1]$ with $A[1]$. In general for any value of $i$ what is true is that $A[bigindex]$ represents the position of the largest element chosen from the array until position $A[i-1]$. We then compare this largest element with $A[i]$ and update the value of `bigindex` if we found a larger element.

```ruby
A=Array[3,6,1,17,-22,11,2,5,6,7]
def max
  bigindex=0
  A.length.times{|i|
    if (A[i]>A[bigindex])
      bigindex=i
    end
  }
  return bigindex
end

print('‘The max index is #{max}’)
```