```
function a=Ex7q2(x,y)
S=@(a)sum((y-a(1)*exp(a(2)*x)).^2);
a=fminsearch(S,[0,0]);
end
```

.this function inputs two variables x and y and outputs one variable a%

lets look at the function S : (we know its a function because it has the syntax %
f=@(input) output;) the function S accepts the variable 'a' from the "mother
function" Ex7q2 and outputs the mathematical expression : sum((y-
a(1)*exp(a(2)*x)).^2)

:lets look at this expression in detail%
multiply each coordinate of the vector x with the scalar a(2) (the second %
.coordinate of vector a) ------- a(2)*x
.exponent every coordinate of the vector ------ exp(a(2)*x)%
. (multiply each element of exp(a(2)*x) by the scalar a(1) ----- a(1)*exp(a(2)*x)%
subtract from the vector y the vector a(1)*exp(a(2)*x))------- y-%
.a(1)*exp(a(2)*x)
each element of the vector y-a(1)*exp(a(2)*x) increase by power of 2 ----- (y-%
a(1)*exp(a(2)*x)).^2

sum all the elements of the vector from the previous stage to get a scalar. this %
.scalar is the output of the function S

now lets look at fminsearch: for the function S (this is a function from space %
.R^2->R^1) find its minimum value when your initial guess of the minimum is [0,0]
the output 'a' of fminsearch is the element of space R^2 (a vector of length 2) %
.that gives the minimum of function S