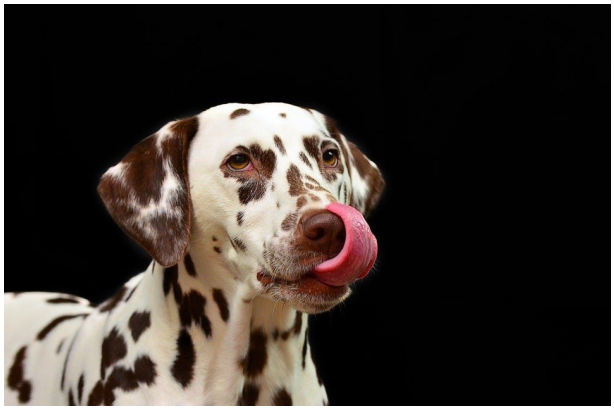
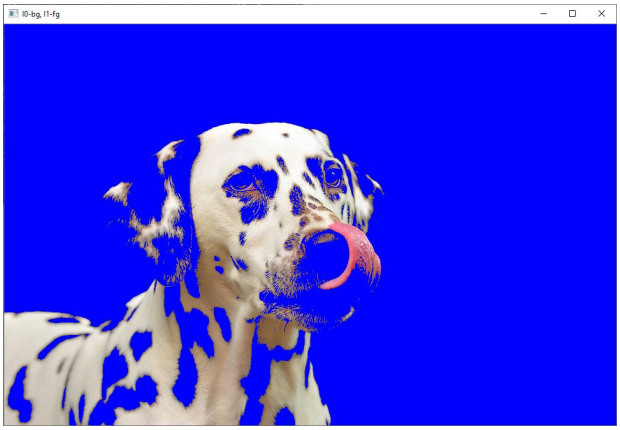
Note: After applying Otsu's algorithm, we are left with two subsets of the image *I0* and *I1*, each consisting of pixels from the original image and the sets being mutually exclusive.

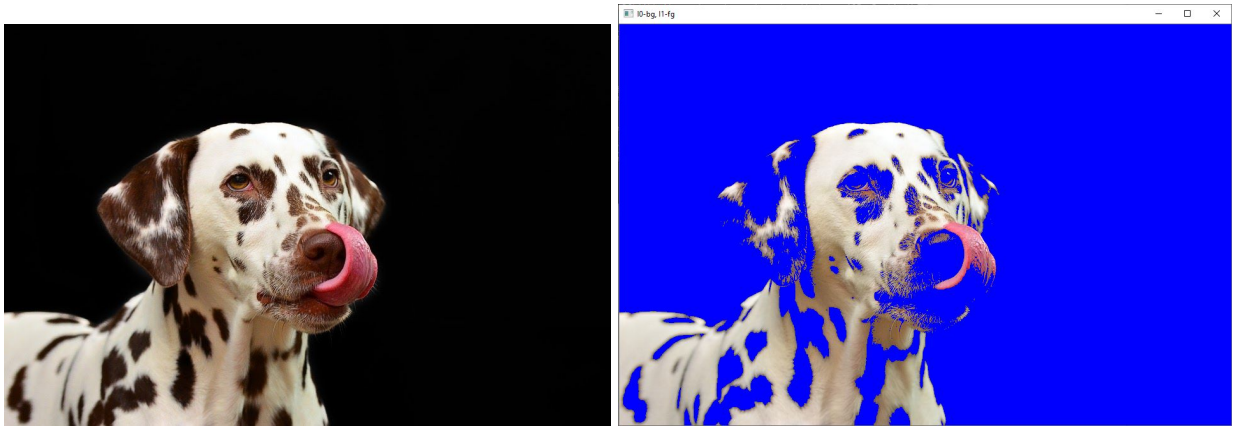
Q) Use the following assumptions to select the appropriate part as your foreground when you apply Otsu's algorithm on an image:

1) **The object will be present at the center of the image.**
    a) Divided the image into 25 equal rectangles and selected the central rectangle to be the image center representative.
    b) Next, calculated the distribution of pixels within the rectangle as to whether they belong to I0 or I1.
    c) If more than 50% of the pixels within the central rectangle belong to I0, then I0 is declared to be the foreground and I1 as the background.
        i) **I0_center>0.5 ⇒ bg='I1'**
    d) Else, I0 is declared to be the background and I1 as the foreground.
    e) Results when using only assumption 1.





2) **Boundary pixels are likely to be the background.**
    a) Collected all the boundary pixels of the image.
    b) Next, calculated the distribution of pixels as to whether they belong to I0 or I1.
    c) If more than or equal to 50% of the pixels belong to I0, then I0 is declared to be the background and I1 as the foreground.
        i) **I0_border>=0.5 ⇒ bg='I0'**
    d) Else, I0 is declared to be the foreground and I1 as the background.
    e) Results when using only assumption 2.



3) **Combining the two assumptions as follows.**
   a) From Assumption(1) we have, **I0_center > 0.5 ⇒ bg='I1'**
      i) This is equivalent to **I0_center <= 0.5 ⇒ bg='I0' --(A)**
   b) From Assumption(2) we have, **I0_border >= 0.5 ⇒ bg='I0'**
      i) This is equivalent to **(1/I0_border) <= (1/0.5) ⇒ bg='I0' --(B)**
   c) Multiplying (A) and (B), we get the following
      i) (**I0_center/I0_border**) **<= 1 ⇒** bg='I0'
      ii) (**I0_border/I0_center**) **>= 1 ⇒** bg='I0'
   d) Combined results