Instructions: Solve the exercises in this same document and include your answer below the corresponding question. First, try to solve all problems individually, and then, meet with your team and discuss the results. Once you are done, save it as a pdf file and upload it to the corresponding section in canvas. **ONLY ONE member of the team uploads the homework.** If more than one person submits the homework, only one will be graded regardless of it being the final version or not.

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Exercises

1. **(15 points) Given the set** $S = \{x | x \in N,\ x\%2 = 0,\ x < 15\}$ **write it using enumeration notation. "%" refers to the modulo operator.**

   S = {2, 4, 6, 8, 10, 12, 14 }

2. **(15 points) Given the set S = {(1,3),(2,6),(3,9),(4,12),…,(99,297)} write it using set comprehension notation.**

   S = { (x,y)|x ∈ N, x < 100, y = 3x }

3. **(20 points) Given the sets A = {z,e} and B={5,9,7} compute the cartesian product AxBxB and list all the elements of the resulting set.**
   A x B x B =

   { (z, 5, 5), (z, 9, 5), (z, 7, 5), (e, 5, 5),(e, 9, 5),(e, 9, 5),

   (z, 5, 9), (z, 9, 9), (z, 7, 9), (e, 5, 9),(e, 9, 9),(e, 9, 9),

   (z, 5, 7), (z, 9, 7), (z, 7 , 7), (e, 5 , 7),(e, 9 , 7),(e, 9 , 7)

   }

4. **(5 points) What is the cardinality of the resulting set of the previous question?**
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5. **(20 points) Given the set A = {a,r,t,5,w,z,@} generate a partition P of A such that |P|=3.**

   P = { {a,r,t}, {5,w}, {z, @} }

6. **(5 points) Given the alphabets $\Sigma_a = \{\#, ?, *\}$ and $\Sigma_b = \{@, 7, z, \$\}$. Is their intersection $\Sigma_a \cap \Sigma_b$ also an alphabet? (True or False).**

   False, no hay intersección y no puede haber alfabetos vacíos

7. **(20 points) List the first 10 elements of {z, cc}* (Kleene star).**

   {z,cc}* = {ε, z, cc, zz, zcc, ccz, cccc, zzz, zzcc, zcccc, …}