ML Assignment # 1

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Task

Bird features

1. Beak size: long, short
2. Wing Span: long, short
3. Tail length: long, short
4. Body size: long, short

# Output:

Type of bird: “Birds of Prey”, “Urban birds”, “Waterfowl”, “Hornbill”, “Flamingoes”, “Hummingbirds”

# Instance Space:

**Recognition Concept:**

* Attributes: Beak size, wing span, tail length and body size
* Each attribute has two values (possibly long or short)
* Size of instance space is |X| = 2\*2\*2\*2 = 16

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| X | Beak size | Wing Span | Tail length | Body size | Bird Specie |
| X1 | Long | Long | Long | Long | - |
| X2 | Long | Long | Long | Short | - |
| X3 | Long | Long | Short | Long | - |
| X4 | Long | Long | Short | Short | - |
| X5 | Long | Short | Long | Long | - |
| X6 | Long | Short | Long | Short | - |
| X7 | Long | Short | Short | Long | - |
| X8 | Long | Short | Short | Short | - |
| X9 | Short | Long | Long | Long | - |
| X10 | Short | Long | Long | Short | - |
| X11 | Short | Long | Short | Long | - |
| X12 | Short | Long | Short | Short | - |
| X13 | Short | Short | Long | Long | - |
| X14 | Short | Short | Long | Short | - |
| X15 | Short | Short | Short | Long | - |
| X16 | Short | Short | Short | Short | - |

**Concept Space:**

|C| = 2|X| = 2|16| = 65536

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| --- | --- | --- | --- | --- | --- |
| X | Beak size | Wing Span | Tail length | Body size | Bird Specie |
| X1 | Long | Long | Long | Long | C(1) |
| X2 | Long | Long | Long | Short | C(2) |
| X3 | Long | Long | Short | Long | C(3) |
| X4 | Long | Long | Short | Short | C(4) |
| X5 | Long | Short | Long | Long | C(5) |
| X6 | Long | Short | Long | Short | C(6) |
| X7 | Long | Short | Short | Long | C(7) |
| X8 | Long | Short | Short | Short | C(8) |
| X9 | Short | Long | Long | Long | C(9) |
| X10 | Short | Long | Long | Short | C(10) |
| X11 | Short | Long | Short | Long | C(11) |
| X12 | Short | Long | Short | Short | C(12) |
| X13 | Short | Short | Long | Long | C(13) |
| X14 | Short | Short | Long | Short | C(14) |
| X15 | Short | Short | Short | Long | C(15) |
| X16 | Short | Short | Short | Short | C(16) |

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| --- | --- | --- | --- |
| 1 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |

|  |  |  |  |
| --- | --- | --- | --- |
| 0 | 0 | 0 | 0 |
| 1 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | 0 | 0 | 0 |
| 1 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |

|  |  |  |  |
| --- | --- | --- | --- |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 1 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |

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| --- | --- | --- | --- |
| 1 | 1 | 1 | 1 |
| 1 | 1 | 1 | 1 |
| 1 | 1 | 1 | 1 |
| 1 | 1 | 1 | 1 |