**Q1. Pruned Tree**

**Output:**

```
Pruned node_id: 2 to achieve accuracy: 86.0%
Pruned node_id: 6 to achieve accuracy: 72.0%
Pruned node_id: 13 to achieve accuracy: 72.0%
Pruned node_id: 28 to achieve accuracy: 71.0%
Pruned node_id: 58 to achieve accuracy: 71.0%
Pruned node_id: 117 to achieve accuracy: 71.0%
Pruned node_id: 236 to achieve accuracy: 70.0%
Pruned node_id: 473 to achieve accuracy: 70.0%
Pruned node_id: 948 to achieve accuracy: 70.0%
Pruned node_id: 235 to achieve accuracy: 71.0%
Pruned node_id: 472 to achieve accuracy: 71.0%
Pruned node_id: 946 to achieve accuracy: 70.0%
Pruned node_id: 27 to achieve accuracy: 71.0%
Pruned node_id: 56 to achieve accuracy: 71.0%
Pruned node_id: 114 to achieve accuracy: 71.0%
Pruned node_id: 230 to achieve accuracy: 70.0%
Pruned node_id: 461 to achieve accuracy: 70.0%
Pruned node_id: 113 to achieve accuracy: 71.0%
Pruned node_id: 228 to achieve accuracy: 70.0%
Pruned node_id: 227 to achieve accuracy: 69.0%
Pruned node_id: 456 to achieve accuracy: 70.0%
Pruned node_id: 914 to achieve accuracy: 70.0%
Pruned node_id: 1830 to achieve accuracy: 70.0%
Pruned node_id: 55 to achieve accuracy: 70.0%
Pruned node_id: 112 to achieve accuracy: 70.0%
Pruned node_id: 226 to achieve accuracy: 70.0%
Pruned node_id: 225 to achieve accuracy: 70.0%
Pruned node_id: 452 to achieve accuracy: 70.0%
Pruned node_id: 5 to achieve accuracy: 75.0%
Pruned node_id: 11 to achieve accuracy: 75.0%
Pruned node_id: 24 to achieve accuracy: 70.0%
Pruned node_id: 50 to achieve accuracy: 70.0%
Pruned node_id: 101 to achieve accuracy: 70.0%
Pruned node_id: 203 to achieve accuracy: 70.0%
Pruned node_id: 408 to achieve accuracy: 70.0%
Pruned node_id: 818 to achieve accuracy: 70.0%
Pruned node_id: 1638 to achieve accuracy: 70.0%
Pruned node_id: 407 to achieve accuracy: 70.0%
Pruned node_id: 23 to achieve accuracy: 75.0%
```

```
Pruned node_id: 48 to achieve accuracy: 69.0%
Pruned node_id: 98 to achieve accuracy: 71.0%
Pruned node_id: 198 to achieve accuracy: 71.0%
Pruned node_id: 398 to achieve accuracy: 70.0%
Pruned node_id: 798 to achieve accuracy: 70.0%
Pruned node_id: 397 to achieve accuracy: 70.0%
Pruned node_id: 795 to achieve accuracy: 70.0%
Pruned node_id: 1591 to achieve accuracy: 70.0%
Pruned node_id: 97 to achieve accuracy: 70.0%
Pruned node_id: 196 to achieve accuracy: 70.0%
Pruned node_id: 394 to achieve accuracy: 70.0%
Pruned node_id: 195 to achieve accuracy: 71.0%
Pruned node_id: 391 to achieve accuracy: 71.0%
Pruned node_id: 783 to achieve accuracy: 71.0%
Pruned node_id: 1568 to achieve accuracy: 70.0%
Pruned node_id: 3138 to achieve accuracy: 70.0%
Pruned node_id: 1567 to achieve accuracy: 71.0%
Pruned node_id: 3135 to achieve accuracy: 70.0%
Pruned node_id: 6272 to achieve accuracy: 70.0%
Pruned node_id: 6271 to achieve accuracy: 70.0%
Pruned node_id: 12544 to achieve accuracy: 70.0%
Pruned node_id: 47 to achieve accuracy: 75.0%
Pruned node_id: 95 to achieve accuracy: 75.0%
Pruned node_id: 191 to achieve accuracy: 75.0%
Pruned node_id: 384 to achieve accuracy: 70.0%
Pruned node_id: 770 to achieve accuracy: 70.0%
Pruned node_id: 383 to achieve accuracy: 75.0%
Pruned node_id: 768 to achieve accuracy: 72.0%
Pruned node_id: 1537 to achieve accuracy: 72.0%
Pruned node_id: 3075 to achieve accuracy: 71.0%
Pruned node_id: 6152 to achieve accuracy: 72.0%
Pruned node_id: 12305 to achieve accuracy: 71.0%
Pruned node_id: 24612 to achieve accuracy: 70.0%
Pruned node_id: 49226 to achieve accuracy: 70.0%
Pruned node_id: 49225 to achieve accuracy: 70.0%
Pruned node_id: 24611 to achieve accuracy: 70.0%
Pruned node_id: 6151 to achieve accuracy: 69.0%
Pruned node_id: 12304 to achieve accuracy: 70.0%
Pruned node_id: 24609 to achieve accuracy: 70.0%
Pruned node_id: 12303 to achieve accuracy: 69.0%
Pruned node_id: 24608 to achieve accuracy: 69.0%
Pruned node_id: 49218 to achieve accuracy: 70.0%
Pruned node_id: 24607 to achieve accuracy: 70.0%
Pruned node_id: 49215 to achieve accuracy: 70.0%
```

```
Pruned node_id: 98432 to achieve accuracy: 70.0%
Pruned node_id: 196865 to achieve accuracy: 70.0%
Pruned node_id: 98431 to achieve accuracy: 70.0%
Pruned node_id: 767 to achieve accuracy: 73.0%
Pruned node_id: 1536 to achieve accuracy: 71.0%
Pruned node_id: 3074 to achieve accuracy: 71.0%
Pruned node_id: 6149 to achieve accuracy: 71.0%
Pruned node_id: 12299 to achieve accuracy: 71.0%
Pruned node_id: 24599 to achieve accuracy: 71.0%
Pruned node_id: 49200 to achieve accuracy: 70.0%
Pruned node_id: 49199 to achieve accuracy: 71.0%
Pruned node_id: 1535 to achieve accuracy: 71.0%
Pruned node_id: 3071 to achieve accuracy: 71.0%
Pruned node_id: 6144 to achieve accuracy: 70.0%
Pruned node_id: 6143 to achieve accuracy: 70.0%
Pruned node_id: 1 to achieve accuracy: 69.0%
Pruned node_id: 4 to achieve accuracy: 71.0%
Pruned node_id: 9 to achieve accuracy: 71.0%
Pruned node_id: 20 to achieve accuracy: 71.0%
Pruned node_id: 42 to achieve accuracy: 71.0%
Pruned node_id: 86 to achieve accuracy: 71.0%
Pruned node_id: 174 to achieve accuracy: 70.0%
Pruned node_id: 350 to achieve accuracy: 70.0%
Pruned node_id: 349 to achieve accuracy: 70.0%
Pruned node_id: 700 to achieve accuracy: 70.0%
Pruned node_id: 41 to achieve accuracy: 69.0%
Pruned node_id: 19 to achieve accuracy: 71.0%
Pruned node_id: 39 to achieve accuracy: 71.0%
Pruned node_id: 79 to achieve accuracy: 71.0%
Pruned node_id: 160 to achieve accuracy: 70.0%
Pruned node_id: 159 to achieve accuracy: 71.0%
Pruned node_id: 319 to achieve accuracy: 71.0%
Pruned node_id: 640 to achieve accuracy: 70.0%
Pruned node_id: 1282 to achieve accuracy: 70.0%
Pruned node_id: 639 to achieve accuracy: 71.0%
Pruned node_id: 1280 to achieve accuracy: 70.0%
Pruned node_id: 2561 to achieve accuracy: 70.0%
Pruned node_id: 5123 to achieve accuracy: 71.0%
Pruned node_id: 10247 to achieve accuracy: 71.0%
Pruned node_id: 3 to achieve accuracy: 68.0%
Pruned node_id: 8 to achieve accuracy: 70.0%
Pruned node_id: 18 to achieve accuracy: 70.0%
Pruned node_id: 17 to achieve accuracy: 70.0%
Pruned node_id: 36 to achieve accuracy: 70.0%
```

```
Pruned node_id: 74 to achieve accuracy: 70.0%
Pruned node_id: 7 to achieve accuracy: 68.0%
Pruned node_id: 16 to achieve accuracy: 71.0%
Pruned node_id: 34 to achieve accuracy: 69.0%
Pruned node_id: 69 to achieve accuracy: 69.0%
Pruned node_id: 140 to achieve accuracy: 70.0%
Pruned node_id: 139 to achieve accuracy: 70.0%
Pruned node_id: 280 to achieve accuracy: 71.0%
Pruned node_id: 33 to achieve accuracy: 70.0%
Pruned node_id: 67 to achieve accuracy: 70.0%
Pruned node_id: 135 to achieve accuracy: 71.0%
Pruned node_id: 272 to achieve accuracy: 71.0%
Pruned node_id: 545 to achieve accuracy: 71.0%
Pruned node_id: 1091 to achieve accuracy: 71.0%
Pruned node_id: 2183 to achieve accuracy: 70.0%
Pruned node_id: 4367 to achieve accuracy: 70.0%
Pruned node_id: 271 to achieve accuracy: 70.0%
Pruned node_id: 543 to achieve accuracy: 70.0%
Pruned node_id: 1088 to achieve accuracy: 70.0%
Pruned node_id: 2178 to achieve accuracy: 70.0%
Pruned node_id: 4357 to achieve accuracy: 70.0%
Pruned node_id: 1087 to achieve accuracy: 70.0%
Pruned node_id: 2176 to achieve accuracy: 70.0%
Pruned node_id: 4354 to achieve accuracy: 70.0%
Pruned node_id: 4353 to achieve accuracy: 70.0%
Pruned node_id: 8707 to achieve accuracy: 70.0%
Pruned node_id: 2175 to achieve accuracy: 70.0%
Pruned node_id: 4351 to achieve accuracy: 70.0%
Pruned node_id: 8703 to achieve accuracy: 70.0%
Pruned node_id: 15 to achieve accuracy: 71.0%
Pruned node_id: 32 to achieve accuracy: 70.0%
Pruned node_id: 66 to achieve accuracy: 70.0%
Pruned node_id: 134 to achieve accuracy: 70.0%
Pruned node_id: 269 to achieve accuracy: 70.0%
Pruned node_id: 65 to achieve accuracy: 69.0%
Pruned node_id: 131 to achieve accuracy: 70.0%
Pruned node_id: 264 to achieve accuracy: 69.0%
Pruned node_id: 529 to achieve accuracy: 70.0%
Pruned node_id: 263 to achieve accuracy: 70.0%
Pruned node_id: 31 to achieve accuracy: 72.0%
Pruned node_id: 64 to achieve accuracy: 70.0%
Pruned node_id: 129 to achieve accuracy: 70.0%
Pruned node_id: 260 to achieve accuracy: 70.0%
Pruned node_id: 522 to achieve accuracy: 70.0%
```

```
Pruned node_id: 1045 to achieve accuracy: 70.0%
Pruned node_id: 259 to achieve accuracy: 70.0%
Pruned node_id: 519 to achieve accuracy: 70.0%
Pruned node_id: 1040 to achieve accuracy: 70.0%
Pruned node_id: 2082 to achieve accuracy: 70.0%
Pruned node_id: 1039 to achieve accuracy: 70.0%
Pruned node_id: 2080 to achieve accuracy: 70.0%
Pruned node_id: 4162 to achieve accuracy: 70.0%
Pruned node_id: 4161 to achieve accuracy: 70.0%
Pruned node_id: 8324 to achieve accuracy: 70.0%
Pruned node_id: 63 to achieve accuracy: 68.0%
Pruned node_id: 128 to achieve accuracy: 69.0%
Pruned node_id: 258 to achieve accuracy: 69.0%
Pruned node_id: 127 to achieve accuracy: 68.0%
Pruned node_id: 256 to achieve accuracy: 70.0%
Pruned node_id: 514 to achieve accuracy: 70.0%
Pruned node_id: 1030 to achieve accuracy: 70.0%
Pruned node_id: 255 to achieve accuracy: 68.0%
Pruned node_id: 511 to achieve accuracy: 68.0%
Pruned node_id: 1023 to achieve accuracy: 68.0%
Pruned node_id: 2048 to achieve accuracy: 68.0%
Pruned node_id: 4098 to achieve accuracy: 70.0%
Pruned node_id: 8197 to achieve accuracy: 70.0%
Pruned node_id: 16395 to achieve accuracy: 70.0%
Pruned node_id: 32791 to achieve accuracy: 70.0%
Pruned node_id: 65583 to achieve accuracy: 70.0%
Pruned node_id: 4097 to achieve accuracy: 68.0%
Pruned node_id: 8195 to achieve accuracy: 71.0%
Pruned node_id: 16392 to achieve accuracy: 70.0%
Pruned node_id: 32785 to achieve accuracy: 70.0%
Pruned node_id: 16391 to achieve accuracy: 69.0%
Pruned node_id: 32784 to achieve accuracy: 70.0%

Printing the pruned tree

Final node Id to prune (for max accuracy): 2

**********************************************************************
********** Final Tree with accuracy: 86.0%  ***********
**********************************************************************

Is Glucose_labeled == b? id: 0 depth: 0
--> True:
  Leaf id: 2 Predictions: {0: 263, 1: 58} Label Class: 0
```

```
--> False:
  Is Glucose_labeled == d? id: 1 depth: 1
  --> True:
    Is Age_labeled == b? id: 4 depth: 2
    --> True:
      Leaf id: 10 Predictions: {1: 14} Label Class: 1
    --> False:
      Is BMI_labeled == b? id: 9 depth: 3
      --> True:
        Is Preg_labeled == c? id: 20 depth: 4
        --> True:
          Is Insulin_labeled == a? id: 42 depth: 5
          --> True:
            Is SkinThickness_labeled == a? id: 86 depth: 6
            --> True:
              Is Age_labeled == d? id: 174 depth: 7
              --> True:
                Is DPF_labeled == a? id: 350 depth: 8
                --> True:
                  Leaf id: 702 Predictions: {1: 1} Label Class: 1
                --> False:
                  Leaf id: 701 Predictions: {0: 2} Label Class: 0
              --> False:
                Is DPF_labeled == a? id: 349 depth: 8
                --> True:
                  Is BP_labeled == c? id: 700 depth: 9
                  --> True:
                    Leaf id: 1402 Predictions: {1: 1, 0: 1} Label Class: 1
                  --> False:
                    Leaf id: 1401 Predictions: {1: 1} Label Class: 1
                --> False:
                  Leaf id: 699 Predictions: {1: 2} Label Class: 1
            --> False:
              Leaf id: 173 Predictions: {0: 1} Label Class: 0
          --> False:
            Leaf id: 85 Predictions: {1: 5} Label Class: 1
        --> False:
          Is Insulin_labeled == d? id: 41 depth: 5
          --> True:
            Leaf id: 84 Predictions: {1: 1} Label Class: 1
          --> False:
            Leaf id: 83 Predictions: {0: 4} Label Class: 0
      --> False:
        Is Insulin_labeled == b? id: 19 depth: 4
```

```
--> True:
  Leaf id: 40 Predictions: {0: 1} Label Class: 0
--> False:
  Is DPF_labeled == b? id: 39 depth: 5
  --> True:
    Leaf id: 80 Predictions: {1: 12} Label Class: 1
  --> False:
    Is Age_labeled == d? id: 79 depth: 6
    --> True:
      Is SkinThickness_labeled == d? id: 160 depth: 7
      --> True:
        Leaf id: 322 Predictions: {1: 1} Label Class: 1
      --> False:
        Leaf id: 321 Predictions: {0: 2} Label Class: 0
    --> False:
      Is Preg_labeled == b? id: 159 depth: 7
      --> True:
        Leaf id: 320 Predictions: {1: 7} Label Class: 1
      --> False:
        Is DPF_labeled == c? id: 319 depth: 8
        --> True:
          Is BP_labeled == b? id: 640 depth: 9
          --> True:
            Is Insulin_labeled == c? id: 1282 depth: 10
            --> True:
              Leaf id: 2566 Predictions: {0: 1, 1: 1} Label Class: 0
            --> False:
              Leaf id: 2565 Predictions: {1: 2} Label Class: 1
          --> False:
            Leaf id: 1281 Predictions: {1: 9} Label Class: 1
        --> False:
          Is BP_labeled == c? id: 639 depth: 9
          --> True:
            Is BMI_labeled == d? id: 1280 depth: 10
            --> True:
              Leaf id: 2562 Predictions: {1: 1} Label Class: 1
            --> False:
              Is Age_labeled == a? id: 2561 depth: 11
              --> True:
                Leaf id: 5124 Predictions: {0: 1} Label Class: 0
              --> False:
                Is DPF_labeled == d? id: 5123 depth: 12
                --> True:
                  Leaf id: 10248 Predictions: {0: 1} Label Class: 0
```

```
                        --> False:
                          Is Preg_labeled == c? id: 10247 depth: 13
                          --> True:
                            Leaf id: 20496 Predictions: {0: 1, 1: 1} Label Cl
ass: 0
                          --> False:
                            Leaf id: 20495 Predictions: {1: 1} Label Class: 1
                  --> False:
                    Leaf id: 1279 Predictions: {1: 5} Label Class: 1
  --> False:
    Is SkinThickness_labeled == b? id: 3 depth: 2
    --> True:
      Is Age_labeled == d? id: 8 depth: 3
      --> True:
        Is Preg_labeled == c? id: 18 depth: 4
        --> True:
          Leaf id: 38 Predictions: {1: 1} Label Class: 1
        --> False:
          Leaf id: 37 Predictions: {0: 2} Label Class: 0
      --> False:
        Is DPF_labeled == c? id: 17 depth: 4
        --> True:
          Is Preg_labeled == a? id: 36 depth: 5
          --> True:
            Is BP_labeled == b? id: 74 depth: 6
            --> True:
              Leaf id: 150 Predictions: {1: 1, 0: 1} Label Class: 1
            --> False:
              Leaf id: 149 Predictions: {0: 1} Label Class: 0
          --> False:
            Leaf id: 73 Predictions: {0: 4} Label Class: 0
        --> False:
          Leaf id: 35 Predictions: {0: 12} Label Class: 0
    --> False:
      Is BMI_labeled == b? id: 7 depth: 3
      --> True:
        Is Preg_labeled == b? id: 16 depth: 4
        --> True:
          Is BP_labeled == a? id: 34 depth: 5
          --> True:
            Leaf id: 70 Predictions: {1: 2} Label Class: 1
          --> False:
            Is DPF_labeled == a? id: 69 depth: 6
            --> True:
```

```
      Is Insulin_labeled == a? id: 140 depth: 7
      --> True:
        Leaf id: 282 Predictions: {0: 4} Label Class: 0
      --> False:
        Leaf id: 281 Predictions: {1: 1} Label Class: 1
    --> False:
      Is Age_labeled == a? id: 139 depth: 7
      --> True:
        Is Glucose_labeled == c? id: 280 depth: 8
        --> True:
          Leaf id: 562 Predictions: {1: 3, 0: 3} Label Class: 1
        --> False:
          Leaf id: 561 Predictions: {0: 1} Label Class: 0
      --> False:
        Leaf id: 279 Predictions: {1: 4} Label Class: 1
--> False:
  Is Preg_labeled == d? id: 33 depth: 5
  --> True:
    Leaf id: 68 Predictions: {1: 2} Label Class: 1
  --> False:
    Is Insulin_labeled == d? id: 67 depth: 6
    --> True:
      Leaf id: 136 Predictions: {1: 1} Label Class: 1
    --> False:
      Is DPF_labeled == b? id: 135 depth: 7
      --> True:
        Is Preg_labeled == a? id: 272 depth: 8
        --> True:
          Leaf id: 546 Predictions: {1: 2} Label Class: 1
        --> False:
          Is Age_labeled == c? id: 545 depth: 9
          --> True:
            Leaf id: 1092 Predictions: {0: 3} Label Class: 0
          --> False:
            Is BP_labeled == b? id: 1091 depth: 10
            --> True:
              Leaf id: 2184 Predictions: {0: 2} Label Class: 0
            --> False:
              Is Insulin_labeled == b? id: 2183 depth: 11
              --> True:
                Leaf id: 4368 Predictions: {0: 1} Label Class: 0
              --> False:
                Is Age_labeled == b? id: 4367 depth: 12
                --> True:
```

```
                        Leaf id: 8736 Predictions: {0: 1, 1: 1} Label Class
: 0
                      --> False:
                        Leaf id: 8735 Predictions: {1: 2} Label Class: 1
              --> False:
                Is Age_labeled == d? id: 271 depth: 8
                --> True:
                  Leaf id: 544 Predictions: {0: 6} Label Class: 0
                --> False:
                  Is Preg_labeled == a? id: 543 depth: 9
                  --> True:
                    Is Age_labeled == b? id: 1088 depth: 10
                    --> True:
                      Is DPF_labeled == a? id: 2178 depth: 11
                      --> True:
                        Leaf id: 4358 Predictions: {0: 1} Label Class: 0
                      --> False:
                        Is BP_labeled == c? id: 4357 depth: 12
                        --> True:
                          Leaf id: 8716 Predictions: {1: 1, 0: 1} Label Class
: 1
                        --> False:
                          Leaf id: 8715 Predictions: {0: 1} Label Class: 0
                    --> False:
                      Leaf id: 2177 Predictions: {0: 9} Label Class: 0
                  --> False:
                    Is DPF_labeled == a? id: 1087 depth: 10
                    --> True:
                      Is Age_labeled == b? id: 2176 depth: 11
                      --> True:
                        Is BP_labeled == b? id: 4354 depth: 12
                        --> True:
                          Leaf id: 8710 Predictions: {1: 1} Label Class: 1
                        --> False:
                          Leaf id: 8709 Predictions: {0: 2} Label Class: 0
                      --> False:
                        Is BP_labeled == b? id: 4353 depth: 12
                        --> True:
                          Leaf id: 8708 Predictions: {0: 3} Label Class: 0
                        --> False:
                          Is Insulin_labeled == a? id: 8707 depth: 13
                          --> True:
                            Leaf id: 17416 Predictions: {1: 1, 0: 2} Label Cl
ass: 0
```

```
                        --> False:
                          Leaf id: 17415 Predictions: {0: 2} Label Class: 0
                    --> False:
                      Is Age_labeled == a? id: 2175 depth: 11
                      --> True:
                        Leaf id: 4352 Predictions: {1: 1} Label Class: 1
                      --> False:
                        Is SkinThickness_labeled == a? id: 4351 depth: 12
                        --> True:
                          Leaf id: 8704 Predictions: {0: 2} Label Class: 0
                        --> False:
                          Is Insulin_labeled == a? id: 8703 depth: 13
                          --> True:
                            Leaf id: 17408 Predictions: {1: 1, 0: 1} Label Cl
ass: 1
                          --> False:
                            Leaf id: 17407 Predictions: {0: 2, 1: 1} Label Cl
ass: 0
      --> False:
        Is Age_labeled == a? id: 15 depth: 4
        --> True:
          Is BP_labeled == c? id: 32 depth: 5
          --> True:
            Is DPF_labeled == c? id: 66 depth: 6
            --> True:
              Is Insulin_labeled == a? id: 134 depth: 7
              --> True:
                Leaf id: 270 Predictions: {1: 2} Label Class: 1
              --> False:
                Is Preg_labeled == b? id: 269 depth: 8
                --> True:
                  Leaf id: 540 Predictions: {0: 3, 1: 1} Label Class: 0
                --> False:
                  Leaf id: 539 Predictions: {0: 4} Label Class: 0
            --> False:
              Leaf id: 133 Predictions: {0: 8} Label Class: 0
          --> False:
            Is SkinThickness_labeled == a? id: 65 depth: 6
            --> True:
              Leaf id: 132 Predictions: {1: 4} Label Class: 1
            --> False:
              Is Preg_labeled == a? id: 131 depth: 7
              --> True:
                Is Insulin_labeled == c? id: 264 depth: 8
```

```
        --> True:
          Leaf id: 530 Predictions: {1: 5} Label Class: 1
        --> False:
          Is DPF_labeled == a? id: 529 depth: 9
          --> True:
            Leaf id: 1060 Predictions: {1: 1} Label Class: 1
          --> False:
            Leaf id: 1059 Predictions: {0: 2} Label Class: 0
      --> False:
        Is Insulin_labeled == d? id: 263 depth: 8
        --> True:
          Leaf id: 528 Predictions: {1: 1} Label Class: 1
        --> False:
          Leaf id: 527 Predictions: {0: 6} Label Class: 0
--> False:
  Is DPF_labeled == c? id: 31 depth: 5
  --> True:
    Is BMI_labeled == a? id: 64 depth: 6
    --> True:
      Leaf id: 130 Predictions: {0: 1} Label Class: 0
    --> False:
      Is BP_labeled == b? id: 129 depth: 7
      --> True:
        Is Insulin_labeled == c? id: 260 depth: 8
        --> True:
          Is Preg_labeled == a? id: 522 depth: 9
          --> True:
            Leaf id: 1046 Predictions: {1: 2} Label Class: 1
          --> False:
            Is Preg_labeled == b? id: 1045 depth: 10
            --> True:
              Leaf id: 2092 Predictions: {1: 1, 0: 1} Label Class: 1
            --> False:
              Leaf id: 2091 Predictions: {0: 2} Label Class: 0
        --> False:
          Leaf id: 521 Predictions: {1: 3} Label Class: 1
      --> False:
        Is Insulin_labeled == d? id: 259 depth: 8
        --> True:
          Leaf id: 520 Predictions: {0: 1} Label Class: 0
        --> False:
          Is Preg_labeled == a? id: 519 depth: 9
          --> True:
            Is Insulin_labeled == a? id: 1040 depth: 10
```

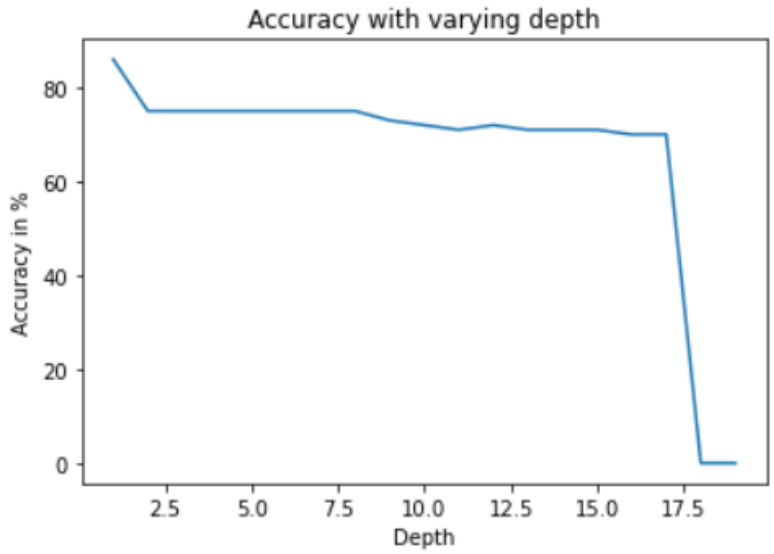
```
                    --> True:
                      Is SkinThickness_labeled == a? id: 2082 depth: 11
                      --> True:
                        Leaf id: 4166 Predictions: {1: 1} Label Class: 1
                      --> False:
                        Leaf id: 4165 Predictions: {0: 1} Label Class: 0
                    --> False:
                      Leaf id: 2081 Predictions: {1: 2} Label Class: 1
                  --> False:
                    Is Age_labeled == c? id: 1039 depth: 10
                    --> True:
                      Is SkinThickness_labeled == a? id: 2080 depth: 11
                      --> True:
                        Is Preg_labeled == d? id: 4162 depth: 12
                        --> True:
                          Leaf id: 8326 Predictions: {1: 1} Label Class: 1
                        --> False:
                          Leaf id: 8325 Predictions: {1: 3, 0: 1} Label Class
: 1
                      --> False:
                        Is Preg_labeled == d? id: 4161 depth: 12
                        --> True:
                          Is Insulin_labeled == a? id: 8324 depth: 13
                          --> True:
                            Leaf id: 16650 Predictions: {1: 1} Label Class: 1
                          --> False:
                            Leaf id: 16649 Predictions: {0: 1, 1: 3} Label Cl
ass: 1
                        --> False:
                          Leaf id: 8323 Predictions: {1: 7} Label Class: 1
                    --> False:
                      Leaf id: 2079 Predictions: {1: 7} Label Class: 1
            --> False:
              Is BP_labeled == b? id: 63 depth: 6
              --> True:
                Is Age_labeled == b? id: 128 depth: 7
                --> True:
                  Is Preg_labeled == a? id: 258 depth: 8
                  --> True:
                    Leaf id: 518 Predictions: {1: 2} Label Class: 1
                  --> False:
                    Leaf id: 517 Predictions: {0: 1} Label Class: 0
                --> False:
                  Leaf id: 257 Predictions: {1: 3} Label Class: 1
```

```
--> False:
  Is Preg_labeled == a? id: 127 depth: 7
  --> True:
    Is Age_labeled == b? id: 256 depth: 8
    --> True:
      Is DPF_labeled == a? id: 514 depth: 9
      --> True:
        Is BP_labeled == a? id: 1030 depth: 10
        --> True:
          Leaf id: 2062 Predictions: {1: 1} Label Class: 1
        --> False:
          Leaf id: 2061 Predictions: {0: 3} Label Class: 0
      --> False:
        Leaf id: 1029 Predictions: {1: 2} Label Class: 1
    --> False:
      Leaf id: 513 Predictions: {1: 3} Label Class: 1
  --> False:
    Is Insulin_labeled == b? id: 255 depth: 8
    --> True:
      Leaf id: 512 Predictions: {0: 1} Label Class: 0
    --> False:
      Is BP_labeled == a? id: 511 depth: 9
      --> True:
        Leaf id: 1024 Predictions: {0: 1} Label Class: 0
      --> False:
        Is Glucose_labeled == c? id: 1023 depth: 10
        --> True:
          Is DPF_labeled == b? id: 2048 depth: 11
          --> True:
            Is Age_labeled == d? id: 4098 depth: 12
            --> True:
              Leaf id: 8198 Predictions: {1: 1} Label Class: 1
            --> False:
              Is Preg_labeled == b? id: 8197 depth: 13
              --> True:
                Leaf id: 16396 Predictions: {1: 1} Label Class: 1
              --> False:
                Is SkinThickness_labeled == a? id: 16395 depth: 1
4
                --> True:
                  Leaf id: 32792 Predictions: {0: 3} Label Class:
0
                --> False:
                  Is Insulin_labeled == a? id: 32791 depth: 15
```

```
                              --> True:
                                Leaf id: 65584 Predictions: {0: 1, 1: 1} Labe
l Class: 0
                              --> False:
                                Is Age_labeled == b? id: 65583 depth: 16
                                --> True:
                                  Leaf id: 131168 Predictions: {0: 1} Label C
lass: 0
                                --> False:
                                  Leaf id: 131167 Predictions: {1: 1, 0: 4} L
abel Class: 0
                        --> False:
                          Is Age_labeled == d? id: 4097 depth: 12
                          --> True:
                            Leaf id: 8196 Predictions: {0: 1} Label Class: 0
                          --> False:
                            Is SkinThickness_labeled == a? id: 8195 depth: 13
                            --> True:
                              Is Age_labeled == b? id: 16392 depth: 14
                              --> True:
                                Leaf id: 32786 Predictions: {1: 1} Label Class:
1
                              --> False:
                                Is BP_labeled == d? id: 32785 depth: 15
                                --> True:
                                  Leaf id: 65572 Predictions: {1: 1, 0: 1} Labe
l Class: 1
                                --> False:
                                  Leaf id: 65571 Predictions: {1: 3, 0: 2} Labe
l Class: 1
                            --> False:
                              Is Preg_labeled == d? id: 16391 depth: 14
                              --> True:
                                Is Insulin_labeled == a? id: 32784 depth: 15
                                --> True:
                                  Leaf id: 65570 Predictions: {0: 1} Label Clas
s: 0
                                --> False:
                                  Leaf id: 65569 Predictions: {1: 1} Label Clas
s: 1
                              --> False:
                                Leaf id: 32783 Predictions: {0: 2} Label Class:
0
                    --> False:
```

```
Leaf id: 2047 Predictions: {0: 1} Label Class: 0
```

**Avccuray with varying depth:**




**Q2.**

**Output:**

```
Below is the final accuracies for ten-fold cross validation:
[80.69, 73.79, 77.24, 68.97, 75.86, 78.62, 75.17, 67.59, 75.17, 69.66]
```