Pseudocode - Algorithm 1: Connecting Pairs of Persons

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```
int numberOfSwaps = 0
int num
vector list

input(num)
while (num is not -1)
{
    list.push_back(num)
    input(num)
}

for (index in list)
{
    if (list[i] is even)
    {
        if (list[i+1] is not list[i] + 1)
        {
            for (rest of individuals in list)
            {
                if (list[j] equals list[i] + 1)
                {
                    swap value at list[i+1] with value at list[j]
                    increment numberOfSwaps
                }
            }
        }
        else { increment i }   // skips to the next pair
    }

    if (list[i] is odd)
    {
        if (list[i+1] is not list[i] -1)
        {
            for (rest of individuals in list)
            {
                if (list[j] equals list[i] - 1)
                {
                    swap value at list[i+1] with value at list[j]
                    increment numberOfSwaps
                }
            }
        }
        else { increment i }   // skips to the next pair
    }
}

print(numberOfSwaps)
```

Step Count Analysis of Efficiency Class: O($4n^2 + 6n + 5$)

```
1 int numberOfSwaps = 0
2 int num
3 vector list

4 input(num)
n while (num is not -1)    Assume n≤30
  {
3n      2 list.push_back(num)
        3 input(num)
  }
n for (index in list)
  {
        2 if (list[i] is even)
          {
                3 if (list[i+1] is not list[i] + 1)
                  {
                        n for (rest of individuals in list)
                          {
$3n+4n^2$                         2 if (list[j] equals list[i] + 1)
                                  {
                                        3 swap value at list[i+1] with value at list[j]
4n                                      4 increment numberOfSwaps
                                  }
                          }
                  }
                  else { increment i }   // skips to the next pair
          }

          else if (list[i] is odd)
          {
                  if (list[i+1] is not list[i] -1)
                  {
                          for (rest of individuals in list)
                          {
                                  if (list[j] equals list[i] - 1)
                                  {
                                          swap value at list[i+1] with value at list[j]
                                          increment numberOfSwaps
                                  }
                          }
                  }
                  else { increment i }   // skips to the next pair
          }
  }

5 print(numberOfSwaps)
```