

## Calculate nDCG@k

```
import math

def compute_idcg(relevance_scores, K):
    relevance_scores.sort(reverse=True)
    idcg = relevance_scores[0]
    count = 1
    for i in range(1, min(len(relevance_scores), K)):
        count += 1
        idg = relevance_scores[i] / (math.log(count) / math.log(2))
        idcg += idg
    return idcg

def main():
    G = [3, 2, 3, 0, 0, 1, 2, 2, 3, 0]
    count = 1
    dcg = G[0]
    idcg = compute_idcg(G.copy(), len(G))

    K = 10

    print("DG@", K, ": ", G[0])
    for i in range(1, len(G)):
        count += 1
        dg = G[i] / (math.log(count) / math.log(2))
        dcg += dg
        print("DG@", K, ": ", dg)

    ndcg = dcg / idcg
    print("nDCG@", K, ": ", ndcg)

if __name__ == "__main__":
    main()
```