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# Weaviate's Guide to VECTOR QUANTIZATION

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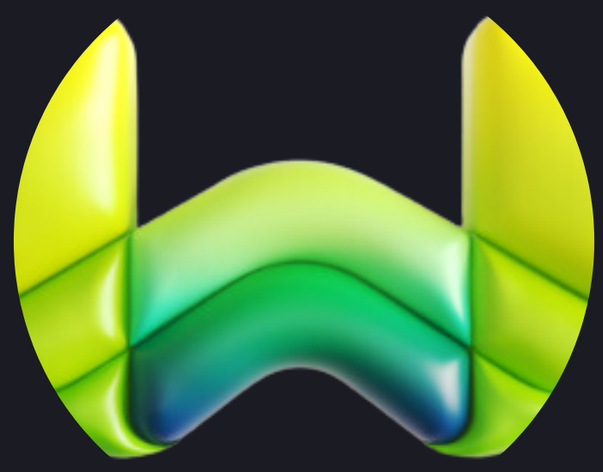
## Every Data Scientist Should Know



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Project scaling.

Data accumulating.

Momory usage growing.

Retrieval slowing.

Cost Skyrocketing.

Sounds familiar?

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We are in the same boat.

But, there is a solution

# VECTOR QUANTIZATION

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# VECTOR QUANTIZATION

✅ Cuts down memory needs

✅ Reduces latency

✅ Slashes cost

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# WEAVIATE

Offers solution

in 2 ways

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# 1

# Product Quantization (PQ)

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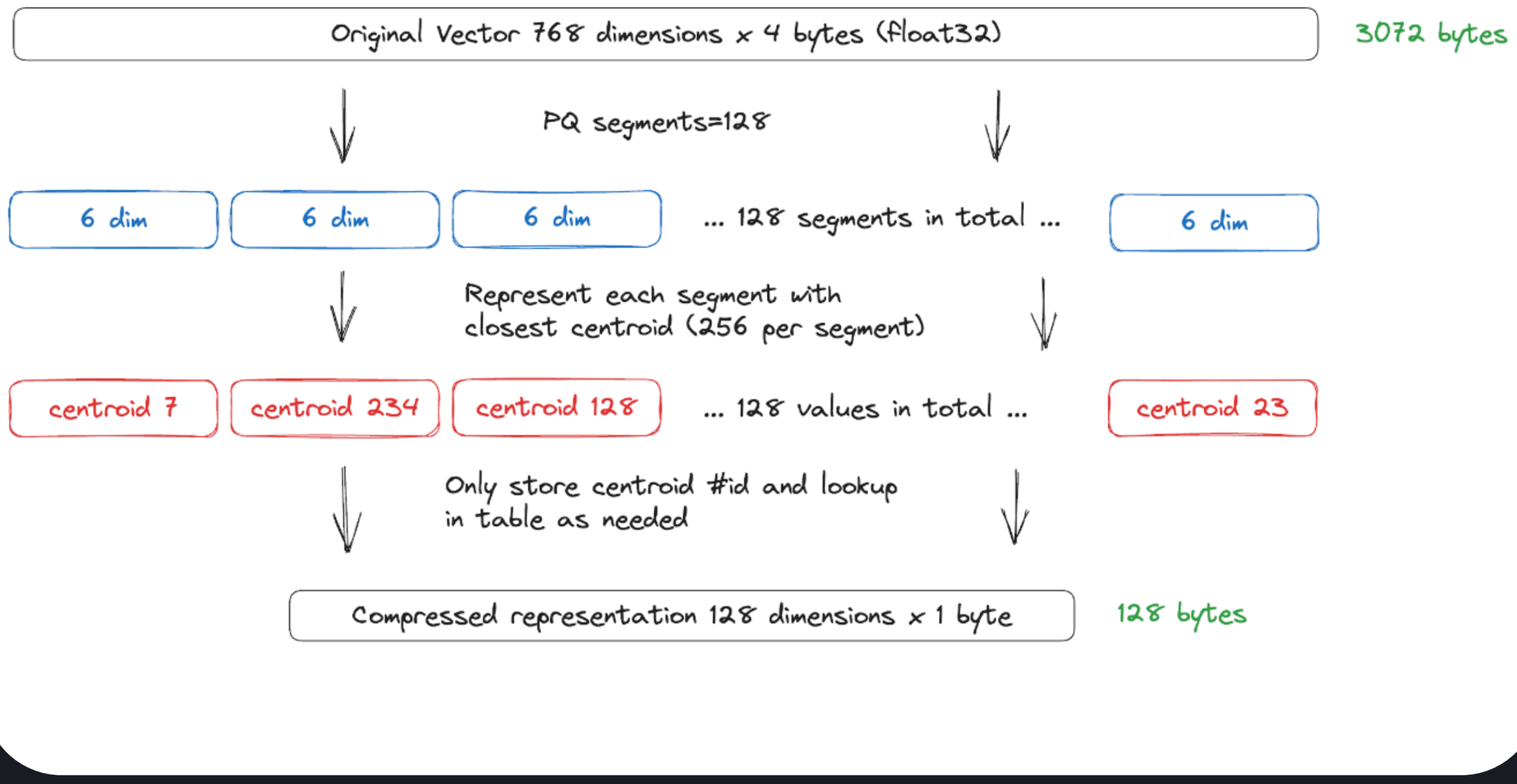
# What PQ does

Compresses your vector embeddings by breaking them down into smaller, manageable segments.



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# PQ Benefits

Reduces memory usage by almost 24 times while maintaining a balance between performance and recall.

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# Best for

Those who use hnsw indexes and need a fine balance between speed and accuracy.

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# 2

# Binary Quantization

# (BQ)

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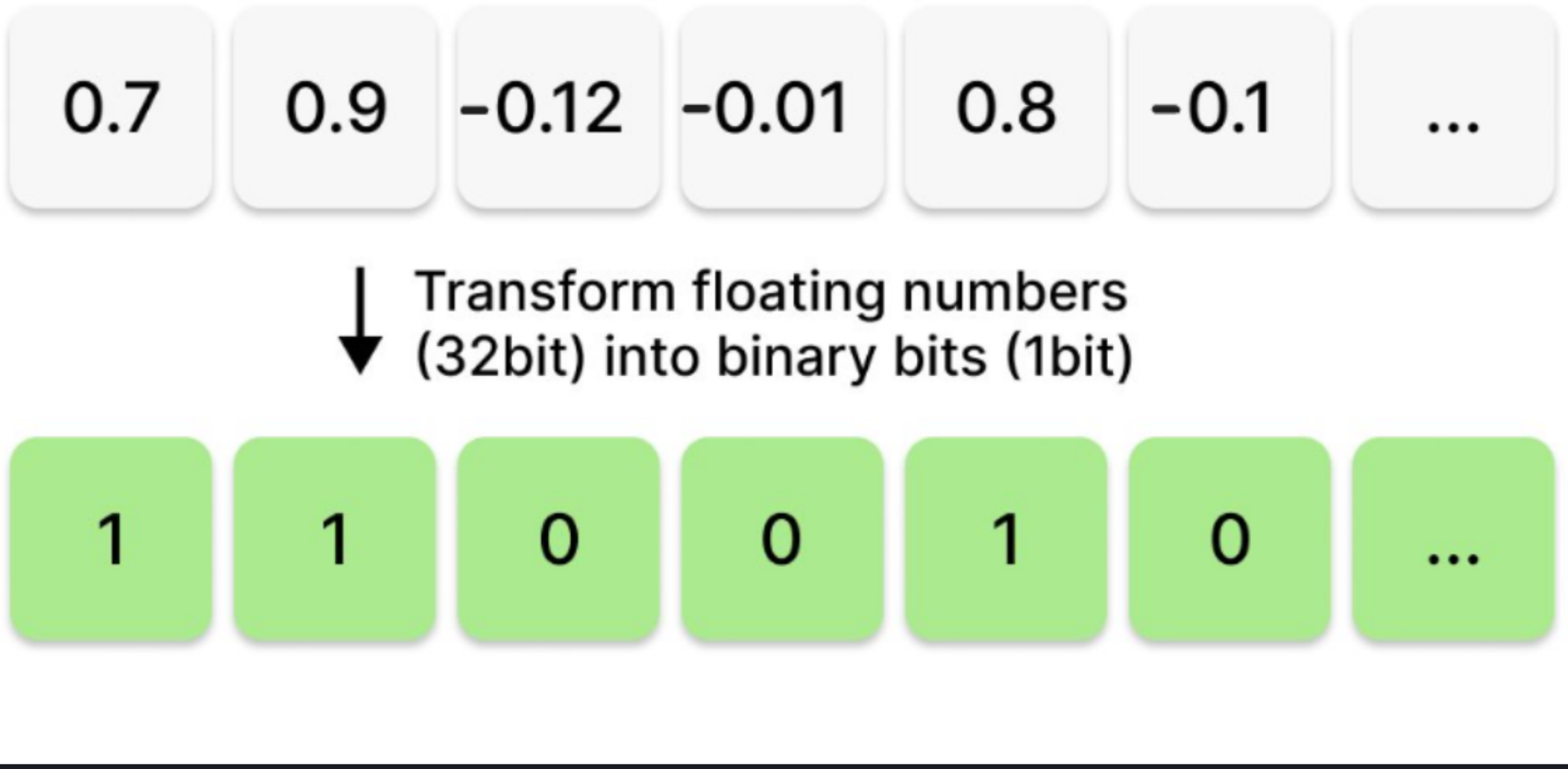
# What BQ does

Converts each vector into a binary format, drastically reducing the size from bytes to bits.



# BQ Benefits

Achieves a 32x reduction in storage requirements and speeds up search processes.

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# Best for

Projects where speed is critical, and slight compromises on accuracy are acceptable.

# 📚 Trade-offs

- **PQ** might slightly reduce recall but saves more memory.

- **BQ** offers incredible speed at the cost of some accuracy.

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# 📚 Bonus

## 🔗 Check links in the comment

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