

# Assignment Duo

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## 1 LINEAR AND BINARY SEARCH RESULT

The asymptotic running time for Linear Search is  $O(n)$  because it traverses the array once until it find the target item.

The asymptotic running time for Binary Search is  $O(\log_2 n)$  because it cuts the array in half then traverse through the array then recursively call it again.

When target item is found:

['AEREWENS ARMOR', 'ALS MAGNA DEUX', 'AMULET OF NATURAL ARMOR +1', 'ARENEA WAND', 'BATTLEFIELD MAP TABLE', 'BLADE OF SHATTERING', 'BLESSED SWORD OF DANCING', 'BONE DUST OF UNDEAD CONTROL', 'BOWL OF PURITY', 'BRACERS OF ARMOR +5', 'BRACERS OF REPELLENCE', 'BUCKLER', 'CENSER OF CONTROLLING AIR ELEMENTALS', 'CHALICE OF GIANTKIND', 'CLAWS OF NEPOTIST', 'CURSED SWORD OF RATHA-ZIM', 'DARKSKULL', 'DRAGON SADDLE', 'DREAM WEAVER', 'EARRING OF COOLING', 'EXPLODING CALTROPS', 'FEATHER TOKEN, WHIP', 'HORN OF VALHALLA', 'IOUN STONE, CLEAR SPINDLE', 'LANTERN OF REVEALING', 'LONG BATTLE BOW', 'MANTLE OF FAITH', 'MAP OF FRIENDS', "PO-TIEN'S STONEY BLADE", 'RING OF FIERY ASSISTANCE', 'ROD OF WOUND AGGRAVATION', 'ROPE OF ENTANGLEMENT', 'SACK OF PLUNDER', "SHELDON'S AVENGER", 'STATUETTE OF NIGHTVEIL', 'STRAND OF PRAYER BEADS, GREATER', 'THE EYE OF IAXOLOK', 'THE NOSE OF VENCO', 'THE SCALP OF KUNG', 'TORCH RING', 'UNIVERSAL SOLVENT', 'VAMBRACES OF UNARMED PROWESS']

What are you looking for? TORCH RING

Linear Search found TORCH RING . Number of comparisons: 40

Binary Search found TORCH RING . Number of comparisons: 5

When target item is NOT found:

['AIBOHPHOBIA', 'APPARATUS OF THE CRAB', 'ARACHNID TOME', 'BASTARD SWORD', 'BLINDFOLD OF WAKEFUL SLEEP', 'CIRCLET OF DEMONIC PROTECTION', 'CLOAK OF CHARISMA +2', 'CLOAK OF DISPLACEMENT, MINOR', 'CLOAK OF MAGIC SHIELDING', 'COFFIN OF BLESSING', 'CRYSTAL BALL WITH SEE INVISIBILITY', 'DEATH ROD', 'DUST OF DARKNESS', 'ELIXIR OF SWIMMING', 'ELONDEL', 'GLOVES OF ARROW SNARING', 'HELM OF TELEPATHY', 'HELM OF TELEPATHY', 'HIVE DART', 'HORN OF CONFUSION', 'HORN OF HOLDING', 'LONG SWORD', 'PO-TIEN'S STONEY BLADE', 'POTION OF INFESTATION', 'POULTICE OF ORI', 'POULTICE OF ORI', 'RING GATES', 'RING OF VENOM', 'ROBE', 'ROBOT TOBOR', 'ROBOT TOBOR', 'SABLE', 'SHORT BATTLE BOW', 'SILVER SHEEN', 'SPIDER RING', 'SPIDER RING', 'STONE BLOODHOUNDS', 'STONE OF ACID ARROW', 'SWORD OF DARKNESS', 'TOWGAR'S TWIN MACES OF DAY AND NIGHT', 'VELUNAEDOR', 'WAND OF BIGBY']

What are you looking for? AXE

Linear Search could not find AXE . Number of comparisons: 42

Binary Search could not find AXE . Number of comparisons: 5