

Assignment Duo

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1 QUICK SORT

The asymptotic running time for quick sort is $O(n * \log_2 n)$ because it recursively calls itself then cuts the array in half.

AEREWENS ARMOR
AERIAL'S DAGGER OF MAGIC MISSLES
AIBOPHOBIA
ALARM WIRE
ALS MAGNA DEUX
AMBER SPIDER
AMULET OF DECEPTION
AMULET OF FALSE RACE
AMULET OF HEALTH +2
AMULET OF HEALTH +6
AMULET OF LIGHTNING PROTECTION
AMULET OF MIGHTY FISTS +1
AMULET OF MIGHTY FISTS +2
AMULET OF MIGHTY FISTS +3
AMULET OF MIGHTY FISTS +4
AMULET OF MIGHTY FISTS +5
AMULET OF NATURAL ARMOR +1
AMULET OF NATURAL ARMOR +4
AMULET OF NATURAL ARMOR +5
AMULET OF PROOF AGAINST DETECTION AND LOCATION
AMULET OF PROOF AGAINST TURNING
AMULET OF THE PLANES
ANGEL'S FURY
ANIMAL LORD'S HELMS
ANVIL OF WONDEROUS WORKS
APHID
APPARATUS OF THE CRAB
AQUASWORD
ARACHNID TOME
ARENEA WAND

ARMATHA'S LONG SWORD
ARROW OF WORMWOOD
ARROWS OF EROCH THE ARCHER
ARROWS OF OUTRAGEOUS FORTUNE
ARROWS OF TRANSLOCATION
ATHAME OF SOUL STEALING
ATTENUATION FIELD
AXE
AXE OF SHATTERING
BACKHAND
BAG OF HOLDING TYPE I
BAG OF HOLDING TYPE II
BAG OF HOLDING TYPE III
BAG OF THORNS
BAG OF TRICKS
BAG OF TRICKS, GRAY
BAG OF TRICKS, TAN
BANDED MAIL OF GROUNDING
BAROTAK'S HAMMER
BASTARD SWORD
BATTLE AXE
BATTLE AXE +3, EARTHSHAKER
BATTLEFIELD MAP TABLE
BEAD OF FORCE
BEDROLL OF COMFORT
BEDROOM KNOCKERS
BELT OF CONCEALING
BELT OF GIANT STRENGTH +6
BELT OF KEEPING
BLADE
BLADE OF SHATTERING
BLESSED (CURSED) OIL
BLESSED SWORD OF DANCING
BLINDFOLD OF WAKEFUL SLEEP
BLOOD SPEAR +2
BLOODSTONE RING
BOAT, FOLDING
BOCCOB
BOLA NECKLACE
BONE DUST
BONE DUST OF UNDEAD CONTROL
BOOK OF SPELLING MISTAKES
BOOK OF STEALTH
BOOK OF THE NECROMANCER
BOOK OF THE PAST
BOOK OF UNTRUTH
BOOTS OF ELVENKIND
BOOTS OF RUNNING
BOOTS OF STRIDING AND SPRINGING
BOOTS OF TELEPORTATION
BOOTS OF THE WINTERLANDS
BOOTS OF THE WRAITH
BORGIR'S SUGAR CUBES
BOTTLE OF AIR

BOW OF CALLED SHOTS
BOW OF DOUBLING
BOWL OF COMMANDING WATER ELEMENTALS
BOWL OF PURITY
BOX OF DELIGHTS
BRACERS OF ARCHERY, GREATER
BRACERS OF ARCHERY, LESSER
BRACERS OF ARMOR +1
BRACERS OF ARMOR +2
BRACERS OF ARMOR +5
BRACERS OF ARMOR +6
BRACERS OF ARMOR +7
BRACERS OF ARMOR +8
BRACERS OF REPELLENCE
BRAZIER OF COMMANDING FIRE ELEMENTALS
BREAST PLATE
BREAST PLATE OF THE CHAMPION
BRIDLE OF CONTROL
BROACH OF INSECT REPULSION
BROAD AXE
BROAD SWORD
BROOCH OF SHIELDING
BUCKER, SPIKED RAZOR WING
BUCKLER
CANDLE OF TRUTH
CANE OF EVOCATION
CANTICLE OF CONCEALMENTS
CAP
CAPE
CARPET OF FLYING, 10 FT. BY 10 FT.
CARPET OF FLYING, 5 FT. BY 10 FT.
CARPET OF FLYING, 6 FT. BY 9 FT.
CASTERS AID
CENSER OF CONTROLLING AIR ELEMENTALS
CHAIN MAIL
CHAINMAIL OF RANDOM SURPRISE
CHALICE OF GIANTKIND
CHAOS DIAMOND
CHIME OF OPENING
CHOPPER
CIRCLE OF BLASTING, MAJOR
CIRCLET OF BLASTING, MINOR
CIRCLET OF DEMONIC PROTECTION
CIRCLET OF PERSUASION
CIRCLET OF SUPERIORITY
CLAWS OF NEPOTIST
CLAYMORE
CLEVERSHOT
CLOAK
CLOAK OF BLACKSHADOWS
CLOAK OF CHARISMA +2
CLOAK OF CHARISMA +6
CLOAK OF DISPLACEMENT, MAJOR
CLOAK OF DISPLACEMENT, MINOR

CLOAK OF ELVENKIND
CLOAK OF ETHEREALNESS
CLOAK OF MAGIC SHIELDING
CLOAK OF RESISTANCE +1
CLOAK OF RESISTANCE +2
CLOAK OF RESISTANCE +5
CLOAK OF THE BAT
CLOAK OF THE MANTA RAY
CLOAK OF THE UNDEAD
CLUB
COFFIN OF BLESSING
COMPOSITE BOW
COMPOSITE STAFF
CORONET OF GITH
CROSSBOW OF POWER
CROSSBOW ROD
CROWN
CRYSTAL BALL
CRYSTAL BALL WITH DETECT THOUGHTS
CRYSTAL BALL WITH SEE INVISIBILITY
CRYSTAL BALL WITH TRUE SEEING
CRYSTAL OF (SPECIFIC CREATURE) FINDING
CUBE OF FROST RESISTANCE
CUBIC GATE
CUP OF CHANGE
CURSED SWORD OF RATHA-ZIM
CUTTER
DACAD
DAGGER
DAGGER +1, MISTCUTTER
DAGGER OF PRYING
DAGGER OF THE WILDS
DAGGERS OF V
DARKSKULL
DAWA'S SCROLLCASE OF SAFEKEEPING
DEATH ROD
DECK OF CARDS
DELACOUR
DIMENSIONAL SHACKLES 28,000 GP
DIOR DROID
DIPLOMAT'S BROOCH
DISC OF ILLUMINATION
DISENCHANTER/UNENCHANTER
DOOM HORN
DRAGOLINESS
DRAGON CLOAK
DRAGON HELM
DRAGON SADDLE
DRAUGHT OF LYCANTHROPY
DREAM WEAVER
DRENAF JUGGERNAUT
DRUMS OF PANIC
DUST OF APPEARANCE
DUST OF DARKNESS

DUST OF DISAPPEARANCE
DUST OF DRYNESS
DUST OF ILLUSION
DUST OF TRACELESSNESS
EARRING OF COOLING
EBUC CUBE
EFFICIENT QUIVER
EFREETI BOTTLE
ELEMENTAL GEM
ELIXIR OF FIRE BREATH
ELIXIR OF HIDING
ELIXIR OF LOVE
ELIXIR OF SNEAKING
ELIXIR OF SWIMMING
ELIXIR OF TRUTH
ELIXIR OF VISION
ELONDEL
ENDLESS ROPE
ERIKSON RING
EVERSMOKING BOTTLE
EVERSOL'S INNEBRIATOR
EXPLODING CALTROPS
EYE STALK
EYES OF CHARMING
EYES OF DOOM
EYES OF PETRIFICATION
EYES OF THE EAGLE
FAIRY BOWSTRING
FALCHION
FAN OF DEADLY QUILLS
FEATHER TOKEN, ANCHOR
FEATHER TOKEN, BIRD
FEATHER TOKEN, FAN
FEATHER TOKEN, SWAN BOAT
FEATHER TOKEN, TREE
FEATHER TOKEN, WHIP
FESTDOOM
FIELD PLATE
FIGHTING SUIT OF PROWESS
FIGURINE OF WONDROUS POWER, OBSIDIAN STEED
FIGURINE OF WONDROUS POWER, SILVER RAVEN
FIRE JAVELIN
FIRE STONES
FIVE CHROMATIC BANES, THE
FLAIL
FLAIL OF ARMOR DISRUPTION
FLEEN'S REAGENT
FLYTRAP LIQUID
FOLDING CATAPULT (OR BALLISTA)
FOOLKILLER
FOOTSTEPS OF SHALTOT
FRICTIONLESS SHIELD
FROSTBITE
FRYING PAN OF WHACKING

FULL HELM
FULL PLATE MAIL
GARMENT OF YVETH
GAUNTLETS OF OGRE POWER
GAUNTLETS OF WARRIOR MIGHT
GEM OF HOODWINKING
GEM OF SEEING
GEMS OF DARKNESS
GLAIVE, DRAGON SLAYER +1/+5
GLASSES OF SPEED READING
GLOBE OF WAR
GLOVES OF ARROW SNARING
GLOVES OF DEXTERITY +2
GLOVES OF DEXTERITY +6
GLOVES OF FAR REACHING
GLOVES OF SPELL STORING
GLOVES OF SWIMMING AND CLIMBING
GLOVES OF THE PUGELIST
GLOVES OF THE SERVANT
GLOVES OF WIZARDRY
GOGGLES OF MINUTE SEEING
GOLEM MANUAL, GREATER STONE
GOLEM MANUAL, IRON
GOLF FLOG
GOSHERWHIP OF LIFE ESSENCE TRANSFERRAL
GOTHIC PLATE
GOTHIC SHIELD
GREAT AXE
GREAT HELM
GREAT SWORD
GRENADE OF THE HEALER
GUARDIAN ARMOR
GUTBUSTER'S SMELLY MITHRAL ARMOR
HAMMER OF POWER DAMPENING
HAMMER OF WEYLUND
HAMMER OF WONDEROUS WORKS
HAND OF THE MAGE
HAND OF TYR
HANDBOOK OF THE MAGUS
HANDY HAVERSACK
HARD LEATHER ARMOR
HARPY BLADE
HAT OF DISGUISE
HEADBAND OF INTELLECT +2
HEALING TORC
HEALING TOTEM
HEARTSTAKE
HECTORIUS'S TWIN MACES OF THE HEAVENS
HECTORIUS'S TWIN RINGS
HELM
HELM OF BRILLIANCE
HELM OF COMPREHEND LANGUAGES AND READ MAGIC
HELM OF DEBILITATION
HELM OF TELEPATHY

HELM OF TELEPORTATION
HELM OF UNDERWATER ACTION
HERO MUSK
HIDE OF TRANSFORMATION
HIVE DART
HORN OF BLASTING, GREATER
HORN OF CONFUSION
HORN OF FOG
HORN OF GOODNESS/EVIL
HORN OF HOLDING
HORN OF VALHALLA
HORSEMAN'S SPEAR
HORSESHOES OF A ZEPHYR
HORSESHOES OF CLEANLINESS
HORSESHOES OF SPEED
HORSESHOES OF STEALTH
HORSESHOES OF WATER-STRIDING
HUNTER'S BOW
HWOCTUL'S MASKS
ICE MACE
INCENSE OF MEDITATION
INSTANT ARMOUR AND RING
INSTANT FORTRESS
IOUN CROWN
IOUN STONE, CLEAR SPINDLE
IOUN STONE, DUSTY ROSE PRISM
IOUN STONE, LAVENDER AND GREEN ELLIPSOID
IOUN STONE, ORANGE
IOUN STONE, PALE GREEN PRISM
IOUN STONE, VIBRANT PURPLE PRISM
IRON BANDS OF BINDING
IRON RATS
ITEM OF INSTANT ARMOUR APPEARANCE
JAVELINS OF PARANOIA
JUDECCA
KIDNAPPER'S BAG
KINGS COINEAR
KITE SHIELD
LANTERN OF REVEALING
LARGE AXE
LARGE SHIELD
LEATHER ARMOR
LENS OF DETECTION
LIGHTNING TOTEM
LINK TABBARD
LONG BATTLE BOW
LONG BOW
LONG STAFF
LONG SWORD
LONG SWORD OF BATTLE FIELD +2
LONG WAR BOW
MACE
MACE OF DIVINE WRATH
MALHREK'S STAFF OF FLAME

MALK'S MAGNIFICENT MANSION
MANACADAM RINGS
MANTLE OF FAITH
MANTLE OF FIERY DISSOLVING
MANTLE OF SPELL RESISTANCE
MANUAL OF BODILY HEALTH +1
MANUAL OF BODILY HEALTH +2
MANUAL OF BODILY HEALTH +3
MANUAL OF BODILY HEALTH +4
MANUAL OF BODILY HEALTH +5
MANUAL OF GAINFUL EXERCISE +1
MANUAL OF GAINFUL EXERCISE +2
MANUAL OF GAINFUL EXERCISE +3
MANUAL OF GAINFUL EXERCISE +4
MANUAL OF GAINFUL EXERCISE +5
MANUAL OF QUICKNESS OF ACTION +1
MANUAL OF QUICKNESS OF ACTION +2
MANUAL OF QUICKNESS OF ACTION +3
MANUAL OF QUICKNESS OF ACTION +4
MANUAL OF QUICKNESS OF ACTION +5
MAP OF FRIENDS
MARTIAL ARTS WEAPON OF CHANGE
MARVELOUS PIGMENTS
MATS OF TRAVELLING
MATTOCK OF THE TITANS
MAUL
MAUL OF THE TITANS
METAL-MORPHIC HAMMER
MIMGOT'S ANTI-MAGIC GIRDLE
MIRROR OF LIFE TRAPPING
MIRROR OF MENTAL PROWESS
MIRROR OF OPPOSITION
MONGOOSE RING
MOOD RING
MOONTHRAX
MORNING STAR
MORTIS RING
MUG OF INFINITE THIRST
NANATH'S RING-STATUE
NEBEL ORBS
NECKLACE OF FIREBALLS TYPE I
NECKLACE OF FIREBALLS TYPE II
NECKLACE OF FIREBALLS TYPE III
NECKLACE OF FIREBALLS TYPE IV
NECKLACE OF FIREBALLS TYPE V
NIGRALS BOOK OF AMASSMENT
NUGGET OF PRESERVING
OBJECTS OF OBSESSIVENESS
OG'S UNBREAKABLE ORB
OGRE'S REQUIEM
OLAH HALO
ORB OF STORMS
PALADIN
PARCHMENT OF PLAGIARISM

PEARL OF POWER, 1ST-LEVEL SPELL
PEARL OF POWER, 2ND-LEVEL SPELL
PEARL OF POWER, 5TH-LEVEL SPELL
PEARL OF POWER, 6TH-LEVEL SPELL
PEARL OF POWER, 7TH-LEVEL SPELL
PEARL OF POWER, 8TH-LEVEL SPELL
PEARL OF POWER, 9TH-LEVEL SPELL
PEARL OF POWER, TWO SPELLS
PERIAPT OF HEALTHPERIAPT OF PROOF AGAINST POISON
PERIAPT OF WISDOM +2
PERIAPT OF WISDOM +6
PHEONIX SPELLBOOK
PHYLACTERY OF FAITHFULNESS
PHYLACTERY OF FAVOR
PINS OF ACUPUNCTURE.
PIPES OF HAUNTING
PIPES OF SOUNDING
PIPES OF THE SEWERS
PLATE MAIL
PLATE OF GLIMMERING HOPE
PO-TIEN'S STONEY BLADE
PORTABLE HOME
PORTABLE PORTAL
POTION OF DELAYED HEALING
POTION OF DREAMING
POTION OF ICEWATER
POTION OF INFESTATION
POTION OF LIQUEFACTION
POTION OF TESTING
POTION OF THE HERO'S HEART
POUCH OF SPARE PARTS
POULTICE OF ORI
PSIONIC KEYSTONE
QUARTER STAFF
QUICKSILVER AMULET
QUILTED ARMOR
RADAR
RANGER'S SWORD
RAZOR LEAF
RAZOR OF BLUNTNESS
RESTORATIVE OINTMENT
RING GATES
RING MAIL
RING OF AIR
RING OF ANNOYANCE
RING OF ARMORING
RING OF DEFENSE
RING OF FIERY ASSISTANCE
RING OF FIRE ABSORBING
RING OF FLICKERING
RING OF FLYING
RING OF GASEOUS FORM
RING OF LETUMORIS
RING OF POWER

RING OF QUICK CASTING
RING OF RANDOM STRIKING
RING OF REDEMPTION
RING OF SIN' SONA
RING OF TELEPATHIC BONDS
RING OF THE EIGHT SKILLS
RING OF THE MAGGOT
RING OF THE MERCIFUL BLOW
RING OF TREASURE LOCATION
RING OF VENOM
RING-BLADE
ROBE
ROBE OF BLENDING
ROBE OF BONES
ROBE OF DARKNESS
ROBE OF EYES
ROBE OF SCINTILLATING COLORS
ROBE OF STARS
ROBE OF THE ARCHMAGI
ROBE OF USEFUL ITEMS
ROBOT TOBOR
ROD OF ASCENSION
ROD OF DEFENSE
ROD OF GOLEM-CASTING
ROD OF REVELATION
ROD OF SUBSTITUTED SPELL COMPONENTS
ROD OF THE RUST MONSTER
ROD OF WOUND AGGRAVATION
ROPE OF CLIMBING
ROPE OF ELEMENTAL BINDING
ROPE OF ENTANGLEMENT
ROPPER
SABLE
SACK OF PLUNDER
SADDLE BLANKET OF WARMTH
SADDLE OF STABILITY
SAILOR'S CHARM
SAL'KESHES SPLENDID STRONGHOLD
SALVE OF SLIPPERINESS
SCALE MAIL
SCARAB OF PROTECTION
SCARAB, GOLEMBANE
SCEPTRE OF ILLUSIONS
SCIMITAR
SEARING TOTEM
SEED OF UNDERSTANDING
SEEDS OF PLENTY
SELF-LOADING BOW
SESSIEL'S SNAKE STAFF
SHADOW CARDS
SHADOWSKILL ARMOR
SHELDON'S AVENGER
SHELDON'S RING OF THE FISHES
SHIELD - STONE WARDEN

SHIELD OF ATTACHMENT
SHIELD OF METAL ADHERENCE
SHIELD OF TENSER
SHIELD OF TUNORORIZILE
SHORT BATTLE BOW
SHORT BOW
SHORT SWORD
SHORT WAR BOW
SHROUDS OF DISINTEGRATION
SHURIKEN +1, RETURNING
SIGNAL BOW
SILVER SHEEN
SKIERO'S SCIMITAR
SKIN OF FRESH WATER
SKULL CAP
SLEEPYTIME BEAR
SLING OF SLUGGING
SLIPPERS OF SPIDER CLIMBING
SMALL AXE
SMALL SHIELD
SNAIL LIQUID
SNAPPING PURSE
SNOWGHOST
SNUFF OF POISON DETECTION
SOAP OF CLEANLINESS
SOOT OF HARDENING
SORCERER'S ROBE
SOVEREIGN GLUE
SPEAR +1, TELESCOPING
SPECTACLES OF SPELL LEARNING
SPECTRAL DARTS
SPIDER RING
SPIKED CLUB
SPLINT MAIL
STAFF OF DIVINE WINDS
STAFF OF TRIPPING
STAR OF LANDRYN TERIAK
STATUETTE OF NIGHTVEIL
STATUETTE OF TYADRIA
STEEL SASH
STONE BLOODHOUNDS
STONE OF ACID ARROW
STONE OF ALARM
STONE OF CONTROLLING EARTH ELEMENTALS
STONE SALVE
STRAND OF PRAYER BEADS
STRAND OF PRAYER BEADS, GREATER
STUDDERED LEATHER ARMOR
SUSTAINING SPOON
SWORD OF CRITIQUE
SWORD OF DARKNESS
SWORD OF ENLIGHTENMENT
SWORD OF FEAR
SWORD OF GITH

SWORD OF KINGS
SWORD OF LIFE
SWORD OF LIFE DESTRUCTION
SWORD OF MASTERY +2
SWORD OF MELNOR
SWORD OF THE AGELESS
SWORD OF THE KAUHNS
SWORD OF THE UNICORN
SWORD PIN
SWORD SCABBARD OF HIDING
SWORDS OF THE FOUR KINGS
TACO CAT
TALISMAN OF HEROIC RETURNS
TAPASTRY OF DISEASE PROTECTION
TEAR OF LIFE
TELEPORT RIBBON
TERRO PICCAPOC'S HALFLING LONGBLADES
THE CIRCLET OF ZAHNLOK
THE CUP OF LIFE
THE EYE OF IAXOLOK
THE HAWKBLADE
THE HEALING RING OF SHELDON
THE NOSE OF VENCO
THE RED ASP
THE SCALP OF KUNG
THE THAIN SOUL RING
THORN WAND
THROWING STONE
THUMB RING OF GRASPING
TOME OF CLEAR THOUGHT +1
TOME OF CLEAR THOUGHT +2
TOME OF CLEAR THOUGHT +3
TOME OF CLEAR THOUGHT +4
TOME OF CLEAR THOUGHT +5
TOME OF LEADERSHIP AND INFLUENCE
TOME OF LEADERSHIP AND INFLUENCE +2
TOME OF LEADERSHIP AND INFLUENCE +3
TOME OF LEADERSHIP AND INFLUENCE +4
TOME OF LEADERSHIP AND INFLUENCE +5
TOME OF UNDERSTANDING +1
TOME OF UNDERSTANDING +2
TOME OF UNDERSTANDING +3
TOME OF UNDERSTANDING +4
TOME OF UNDERSTANDING +5
TONGUE TWISTER
TORCH RING
TORDOUR'S REUSABLE WRITING TABLET
TORQUE OF AERIE
TOTEM OF HIDING
TOWER SHIELD
TOWGAR'S ARMOR OF THE HEAVENS
TOWGAR'S TWIN MACES OF DAY AND NIGHT
TOWGAR'S TWIN RINGS OF STRENGTH AND WISDOM
TRAYCIE'S THUNDER TOOTH

TROLL JAR
TWIG OF A DOZEN USES OR THE HANDY STICK
TWIN SHORT SWORDS OF DEFENCE
TWO-HANDED SWORD
UFO TOFU
UNCLE TRAPSPRINGER'S DELOCKING LOCKPICKS
UNGUENT OF TIMELESSNESS
UNIVERSAL SOLVENT
VAMBRACES OF UNARMED PROWESS
VAMPIRE CONE
VAPORIZER
VELUNAEDOR
VEST OF ESCAPE
VESTMENTS OF HOLY MIGHT
VESTMENTS OF VIRTUE
WAFERS OF DEATH AVOIDANCE
WALKING STICK +3
WAND OF BIGBY
WAND OF YELLOW STONES
WAR DRUM
WAR HAMMER
WAR HAMMER +3/+2
WAR STAFF
WARDING STAKES
WARTEXX
WAS IT A RAT I SAW
WEAPON RING
WEI CHIN'S PORTABLE WRITING DESK
WELL OF MANY WORLDS
WHISPER BLADE
WHITE SWORD
WILD WILD WIZARD'S STAFF
WIND FAN
WINE BOTTLE OF HIGH SPIRITS
WINGS OF FLYING
WINTER'S NIGHT
WISE WHISPER (SWORD OF GUIDANCE)
WIZARDS WARDROBE
WOOD WAND
YE ROBE OF USELESS THINGS
ZALES MIGHT

The number of comparisons: 6903