**Answers**

Below are the top 5 most frequent words in **all\_words.csv** and **all\_uppercase\_words.csv**

5 Most Frequent Words in 'all\_words.csv':

Word Frequency

3266 the 2504

2408 of 1859

2049 is 1316

3307 to 1232

621 and 986

5 Most Frequent Words in 'all\_uppercase\_words.csv':

Word Frequency

48 I 151

0 A 34

10 B 21

80 OF 20

18 CHAPTER 15

**Comparison**

**Similarities**

Both lists contain common English words like the, of and to among the most frequent words, which suggests that these words are frequently used in the text.

**Differences**

The all\_uppercase\_words.csv list contains uppercase words, which may indicate the presence of proper nouns or significant terms in uppercase.

all\_words.csv includes lowercase words like is and and, which are not present in all\_uppercase\_words.csv.

The frequencies of the words in all\_words.csv are relatively higher compared to all\_uppercase\_words.csv, indicating that common lowercase words are used more frequently in the text.

**Observations**

The similarities between the two lists show that certain common words, both in uppercase and lowercase, are prevalent in the text.

The differences suggest that all\_uppercase\_words.csv likely contains proper nouns, acronyms, or terms emphasized in uppercase.

Additionally, the higher frequencies in all\_words.csv indicate the importance of common lowercase words in the text.

**Surprising Parts**

It's surprising that I is the most frequent word in all\_uppercase\_words.csv. This suggests that the text may contain a significant amount of first-person narrative or dialogue.

The presence of CHAPTER in all\_uppercase\_words.csv is unexpected, indicating that chapters or sections of the text are marked in uppercase. This is common in literary works but may not be seen in all types of text.

These surprising elements provide insights into the specific characteristics of the text being analyzed and hint at its content and structure.

**Analysis answers for all-ns-words-with-probability**

1. How many unique non-stop words are in the text?

**Solution**

2853

2. Which is the least probable word? (if there is a tie, please state the tie words)

**Solution (check least\_probable\_words.csv)**

**Least Probable Word(s):** ACQUAINTANCE, ACTUAL, AGREEMENT, APPEARANCE, Acquaintance, Additional, Author, Awareness, BIBLIOGRAPHICAL, Bannerman, Books, Bradley, British, Broadly, CONSEQUENTIAL, CONTRACT, Campbell, Cantor, City, Compliance, Considered, Contact, Continental, Contributions, Copyright, Creating, DAMAGE, DESCRIPTION, DIRECT, DISCLAIMER, DISTRIBUTE, DISTRIBUTOR, DONATIONS, December, Defect, Defects, Degrees, Domestic, EIN, ERROR, EXISTENCE, EXPRESS, Earth, East, Email, England, English, Euclid, Europe, FALSEHOOD, FITNESS, FOUNDATION, Food, Future, Georg, George, Gilbert, Gordon, Granted, Greeks, Hart, Henry, Human, IDEALISM, III, IMPLIED, INCIDENTAL, INCLUDING, INDEMNITY, INDIRECT, INDUCTION, INTUITIVE, IRS, Idealists, Ides, Immanuel, Instances, Internal, International, Judgements, Judging, June, Kantian, Keener, Keynes, Königsberg, LIABILITY, LIABLE, LIMITS, Lake, Language, Latin, Leaving, Library, Light, Locke, MERCHANTABILITY, March, Memories, Michael, Mission, Mississippi, Moore, Murray, NATURE, NEGLIGENCE, NOTE, NOTICE, Neglecting, Newton, North, OPINION, OWNER, Opposition, PARAGRAPH, PGLAF, PHILOSOPHICAL, POSSIBILITY, PREFACE, PRINCIPLES, PROBABLE, PUNITIVE, PURPOSE, Philosophical, Principles, Produced, Pronouns, Prussia, READ, REALITY, REFUND, REMEDIES, REPLACEMENT, Rationalists, Redistributing, Redistribution, Reflection, Refund, Release, Replacement, Returning, Revenue, Revolution, Roman, SEND, STRICT, Salt, Sceptics, Sections, Service, Sir, Space, Speaking, Special, Starting, Struldbugs, Swift, TRADEMARK, TRUTH, Times, Title, Truth, Truths, UT, Uneducated, Universals, Universe, University, Updated, VIII, Volunteers, War, Waterloo, West, Whitehead, XII, XIII, XIV, XV, York, abide, abstain, abstracted, abstractions, abstractly, absurdities, acceptance, accepts, accessed, accessible, accident, accidental, accidents, accompanied, accord, accounting, accurate, accusative, achieve, achieves, acquiesce, acquiescence, acquisition, activity, acute, adapts, adding, address, addresses, adduced, adequacy, adequately, admirable, admitting, admixture, advances, adversaries, advocate, advocates, advocating, aesthetic, aether, affairs, affections, affirmative, afforded, agent, agreeably, aim, aimed, akin, alien, allowed, allowing, alteration, altered, alternate, alternatives, alters, ambitious, amend, amply, analogous, analyse, analyses, anatomist, animal, announcement, anticipate, anticipating, anticipation, appearances, appearing, appetite, application, applied, apportions, apprehends, approaches, approaching, arduous, argues, arguing, arose, arrange, array, arrived, arriving, arrogant, artificial, ascertained, assassinated, assented, assigns, assimilate, assist, assumptions, assurance, assure, assured, astray, ate, atoms, attached, attack, attain, attainable, attested, attitude, attributing, avoided, avoiding, babies, baldness, banging, bar, barrier, bed, beg, begging, beginner, begs, begun, behave, behaviour, beleagured, bell, bewildering, bid, bigger, binary, binds, blank, bolder, bone, bored, borne, bounds, brick, briefest, brighter, brightness, broken, build, builder, buildings, calculate, calculated, calm, camps, candid, card, careful, carelessly, carry, catalogue, catalogued, catching, categories, causing, centuries, century, chance, changeable, changed, charitable, charities, checks, child, chimaera, choice, chosen, citizens, citizenship, city, clash, clashes, clean, clock, closed, closer, closes, clouds, coalesce, codes, cohere, coin, coins, collective, colony, combination, combine, coming, commercial, commit, communicate, community, comparative, compare, compared, comparing, competent, compilation, complement, completed, compressed, conceivable, conceivably, concentrate, concluded, concourse, condemns, conduct, confess, confine, confining, confirmation, confirmed, confirms, conflict, conformity, confused, confusing, confusions, confute, conjecture, connecting, connects, consent, consequences, consisted, constituting, construct, constructed, constructing, constructions, constructive, contemplated, contemplating, contemplative, contemptuously, contended, contention, contentions, continued, continuing, continuous, continuously, contradict, contradictory, contrast, contributed, contribution, contributions, convenient, converged, conversation, convert, convincing, cool, corporation, correlative, corresponded, corrupt, counterparts, countless, countries, cranny, creates, creation, criterion, criticisms, criticized, crudely, current, custom, customary, cut, cutting, damage, damaged, danger, dates, debate, debated, deceitful, deceive, deceptive, decides, deciding, decision, declared, deducing, deductible, deeds, deeply, defeated, defensible, defined, definiteness, definitions, deletions, deliberate, delightful, delusion, demanding, demonstrably, demonstrative, demonstratively, denies, dentist, dependence, depending, descend, describes, describing, descriptive, desert, deserts, deserves, deserving, designate, desirability, desirable, desiring, desirous, destroyed, destroys, destructive, detach, determines, development, developments, diary, dictionary, die, diminish, diminished, diminishes, dined, directions, directs, disappear, disappoint, disappointing, disclaim, disclaimers, discontinue, discuss, disease, disengaged, disk, dismiss, dispassionately, display, displayed, disputable, disputants, dissociated, distinctly, distinguishes, distort, distorts, diverge, divest, divide, divided, divisibility, dogmas, dogmatic, dogmatism, domestic, dominion, donation, donors, doubtless, downloading, drawn, dried, drifted, drive, drives, duly, easiest, eclipse, edition, educated, educational, effected, elapse, elapsed, elect, elected, electric, elementary, elements, elucidation, email, embark, emerged, emerges, emitted, emitting, emphasized, emphatically, employee, employees, employs, engagement, engendered, enlarged, enlarges, enormously, enrich, ensuring, entails, entangled, enter, entertaining, enumerated, enumeration, enunciated, equal, equivocation, ergo, estimated, eternal, eternally, everyday, exact, examines, exceedingly, excluding, exclusion, exemplify, existent, expend, expense, explicitly, explored, exploring, exponents, exporting, expressions, extend, extends, extensive, extrinsic, fabric, facility, faculty, failing, fainter, faintness, fallacies, fallacy, fallible, falls, falsified, family, fancy, fast, fatal, favouritism, fear, features, fed, feeds, fetters, feverish, file, files, financial, fine, fixed, flash, foes, foolish, football, force, forces, forget, forgetting, forgo, forgotten, forks, formal, formally, formats, fortress, fortuitous, fortune, forwards, fostered, fourth, fragment, fragments, framework, frightened, fulfilment, fulfils, gain, garrison, generality, geography, geology, glance, glasses, globe, goals, goodwill, gradations, grain, grapple, grasp, gratefully, gratuitous, gravely, greens, groundless, grow, growing, guarded, guide, habits, habitual, habitually, halves, handbooks, happiness, hardnesses, harm, harmless, harmony, hates, hatred, hatreds, heartbeats, heaven, heavens, helpful, heretofore, hesitatingly, hides, hills, hinder, historian, historic, historically, honour, hoofs, hoped, hopeless, horrors, host, hot, hundreds, hypertext, identification, ignorance, ignorant, illumination, illusoriness, illusory, illustrated, illustrations, immutable, impaired, impairs, impartial, impartially, impenetrable, impersonal, impose, impression, imprisoned, inaccurate, inclination, includes, incompatible, inconsistencies, inconsistency, increase, increasing, incredulous, indefinitely, indemnify, independence, indestructible, indicating, inevitable, inexplicable, infallibility, infancy, infected, inferring, infinitesimal, inflected, inflections, influence, infringed, infringement, inhabitants, inhabited, inherent, innate, innocent, inoperative, inquire, inquired, insistent, insoluble, inspiration, instants, instincts, instrument, insubstantial, intelligent, intended, intently, interact, interferes, intermediary, internal, interpret, interpreted, interrelation, interrupted, introduce, intuitively, invalidity, invented, inventing, inventions, investigations, invites, irrefutable, isolation, joint, justly, killed, knits, knives, knowable, lapse, larger, launched, lay, learnt, leaving, legally, legitimately, level, liberating, liberation, liberator, liberty, library, licensed, lies, limitations, limiting, linked, lips, live, lived, locations, logician, looked, loose, loosen, lot, loud, lowest, luminously, lying, magnifies, maintain, maintaining, majority, manager, marching, marriage, match, maximum, meanings, melt, memories, mention, mercilessly, merest, merges, merits, metaphorically, midst, miles, mineralogist, minor, miracle, misery, misleadingness, mistake, mistakes, misunderstanding, mitigate, mode, modification, modifications, modify, momentary, month, mortality, moved, movements, multiplication, multiplicity, musical, mutually, mystic, mystical, mysticism, nation, native, nearest, nearness, negligible, network, newness, news, newsletter, newspapers, noises, nominative, nonproprietary, nook, noteworthy, noticing, notifies, notions, nouns, novelist, nowadays, nowhen, numerous, objectionable, objective, oblivious, obscure, observe, observing, obsolete, obstacle, obstacles, obstinate, obtuse, occupant, occupying, odd, office, oftener, omission, oneself, opaque, operated, operative, opportunities, opportunity, opposites, orator, orderly, ordnance, organized, organizing, organs, origin, originally, originator, outcome, outdated, outlines, outward, oval, owed, painfully, palpable, papers, paperwork, paradoxes, paradoxical, partially, party, passage, passes, pausing, pay, peace, peculiar, peculiarly, perfection, performances, periodic, permanence, perpetual, persons, perspective, persuaded, persuading,

perturbed, phantasmagoria, phenomenon, philosophize, physics, physiological, physiology, pink, placing, plane, planet, plausibility, playing, poisonous, positively, possess, possessed, possession, poverty, powerlessness, powers, practice, practised, precisely, preferable, preparing, prescribe, presence, preservation, pressing, pressure, pressures, presumption, presupposed, pretty, prevent, primitive, proceeded, proceeds, processes, processing, producing, production, products, profess, profit, profitable, profited, profits, profoundest, progress, progressively, prohibition, prolonged, promote, promotion, pronounce, pronouns, proofread, proposed, proprietary, provision, provisionally, provisions, prudent, psychologically, psychology, pursue, pushed, puzzling, quibbling, range, ranging, rapping, rationalist, rationality, readable, readers, realization, realized, reappear, receiving, recognizes, recombines, reconcile, reconstructed, recorded, redistribute, redistributing, redistribution, reduce, reducible, refined, reflecting, refutable, regress, regulating, rejection, relate, relational, reliable, religion, remarkably, remarks, remote, remoter, removal, removes, renamed, renounce, repeat, repeatedly, repetition, replaced, reported, reports, represent, representations, representative, representing, request, resemblances, residue, restate, resting, restricted, retain, retained, retort, returns, revealed, reversed, revert, review, rigid, rival, rob, robbing, roof, rooted, rotate, rotating, roundabout, rounded, rouse, roused, royalty, runs, samples, satisfaction, satisfying, save, scaffold, sceptic, sceptical, schoolmen, sea, searches, secures, seldom, sending, separated, sequel, serve, service, sets, seventeenth, severe, shadow, sharing, sharp, sheets, shiny, shock, short, shortly, simplify, situated, skeleton, sleeping, slowly, smelling, smells, sober, society, sold, solicitation, solid, solve, solves, solving, sophistry, soul, sour, south, specially, species, spectacles, speculative, speech, spoke, spoons, sprang, staff, stages, started, starting, starts, step, stone, stored, straightforward, strangeness, stranger, strangest, strike, strikes, striking, strives, striving, struck, structure, struggling, studies, sublime, subscribe, subsequent, subsequently, subsumed, subsumptions, success, successively, suffering, sufficed, suggestion, suggestions, sunset, supplied, surprised, surrender, surrounded, surveys, survive, surviving, suspended, swamp, sweet, synonymous, systematize, tablecloth, tactile, tap, task, tasting, taught, taxes, telegram, temper, temperaments, tempted, tending, tenet, term, texts, texture, theses, thesis, thraldom, throw, throws, thwarting, timeless, tincture, tolerably, tongue, toothache, topics, total, touches, traditional, trains, trammels, transcribe, transcription, transfer, transform, transitory, travels, treated, treating, treatment, triangularity, trifling, trotting, trouble, troubled, troubles, trusted, tuning, type, types, typical, tyranny, unaccustomed, unaffected, unattainable, uncertain, unchanged, unchanging, uncomfortable, uncommon, unconscious, undeniable, undeniably, underlie, underlies, undertake, undiminished, undue, unenforceability, unexpectedly, unexperienced, unimportant, unites, uniting, unlearn, unlink, unplausible, unprotected, unpublished, unreflectingly, unreflective, unsafe, unsolicited, unsolved, unsound, unsuspected, unusual, unwarrantable, unwise, updated, upset, upstairs, urges, usage, vagueness, vaguer, vain, valleys, variable, variations, variety, variously, varying, vast, veil, verification, version, viewing, vindicate, violates, violent, virtuous, virus, voice, voices, void, volume, volunteer, voyage, walk, walks, walled, walls, war, warranties, warrants, waste, wear, wearing, weather, weight, west, window, wise, wonderful, wooden, wore, worst, wrings, writers, yield

**Minimum Probability: 8e-05**

3. What observation can you make about the probabilities?

**Solution**

The probabilities of non-stop words vary, with some words being less probable than others. Some words may have very low probabilities.

4. Which sentence is more likely:

a. If a belief is true, it can be deduced it is universal. (Probability: 0.00935 )

b. Criticism of knowledge is counter to scientific results. (Probability: 0.02389 )

Sentence b is more likely because it has a higher cumulative probability of non-stop words.