

Scobol Solo 2021

Packet 14 (Round 14)

1. The big-O [oh] runtime for any comparison-based sorting algorithm cannot be better than n times one of these functions of n . If n is a large integer, the probability that a random integer less than n is prime is inversely proportional to one of these functions of n . These functions have graphs that approach the negative- y axis asymptotically when their base is greater than 1. The change-of-base formula converts between different examples of these functions. Multiplying two inputs before applying this type of function gives the same result as adding the outputs after applying this type of function. Name these functions developed by John Napier [NAY-pee-ur], the inverses of exponential functions.

Answer: logarithmic functions or logarithms

2. In a text that defined this concept, a different version of this concept was credited to Georg Groddeck, and it was said that the repressed is part of this concept. That text also claims that this concept contains the passions. This part of the mind is guided by the pleasure principle and is made up of innate instinctive impulses, which is in contrast to moralizing impulses. This part of the mind is one of three parts according to the theory behind psycho-analysis. Name this component of personality that, according to Sigmund Freud's model of the psyche [sy-kee], exists along with the ego and super-ego.

Answer: id [accept es]

3. In 1981, Mauritania [mor-ih-TAY-nee-uh] became the last country to officially ban this practice. The existence of this practice is shown in the Code of Hammurabi by some penalties being half as large as others. This practice is used to explain why the Bamana Empire and Khasso Kingdom engaged in a lot of warfare and trade. A desire to end this practice was a driving force in the Haitian Revolution. Much of the 16th- and 17th-century trade involving this practice originated near the Senegal, Gambia, and Congo Rivers in west Africa. Name this practice that fed the Middle Passage of forced transport of people from Africa to the Americas.

Answer: slavery [or enslavement or buying slaves or owning slaves or trading slaves or selling slaves or other reasonable answers containing slave]

4. In a poem by J. R. R. Tolkien, these things go “over rock and under tree, by caves where never sun has shone”. According to the title of that poem, these things “go ever, ever on”. A Walt Whitman poem about one of these things states “Henceforth I ask not good-fortune, I myself am good-fortune.” That poem is the “Song of the Open” one of these things. Another poem titled for one of these things ends with the line “And that has made all the difference.” At the beginning of that poem, two of these things “diverged in a yellow wood.” Name these things, one of which was “Not Taken” by the speaker of a poem by Robert Frost.

Answer: roads [accept “Roads Go Ever On” or “The Song of the Open Road” or “The Road Not Taken”]; do not accept similar words like “street”]

5. Part of this human organ is divided into Brodmann areas. The Wernicke’s [VAIR-nih-kuh’z] area and Broca’s area are inside this organ, and damage to them causes aphasia [uh-FAY-zhuh]. The outside of this organ has bumps called gyri [JY-“rye”] and grooves called sulci [SULL-“sigh”]. Some of this organ’s cells called oligo-dendro-cytes [OH-lih-goh-DEN-droh-“sites”] are responsible for creating material that protects other cells in this organ. Each hemisphere of this organ has frontal, parietal [puh-RY-ih-tull], temporal, and occipital [“ox”-IP-ih-tull] lobes. The three main parts of this organ are the cerebrum, cerebellum, and stem. Name this organ inside the skull.

Answer: brain

Check the score.

6. The first city that this river flows through is Rishikesh. Near the end of this river’s path, it splits up, forming the Padma River. When this river flows through the state of Bihar, it goes past the capital, Patna. This river combines with the Brahmaputra [brah-muh-POO-truh] River before emptying into the Bay of Bengal. It is common for people to send leaf bowls with oil lamps down this river after praying in an Aarti [ar-tee] ceremony, and it is considered a religious act to bathe in this river even though doing so is often unsafe due to pollution. Name this river in India sacred to Hindus.

Answer: Ganges [GAN-jeez] River [or Ganga]

7. The bottom left corner of a painting by this artist shows a brown dog lying next to a man in a white shirt and black pants, shoes, and hat. This painter depicted smoke-stacks in the background of that painting, whose bottom right corner shows a boy in a cap in waist-deep water with his hands in front of his mouth. The lower left corner of another painting by this artist shows a man resting on his elbow on the grass and smoking a pipe. On the right side of that painting, a woman is walking a monkey on a leash. Name this person who painted *Bathers at Asnières* [ahn-yair] and *A Sunday Afternoon on the Island of La Grande Jatte* using pointillism.

Answer: Georges(-Pierre) Seurat [zhorz h soo-rah]

8. Gabriel Rains developed early versions of this weapon during the Civil War, and even earlier versions were called fougasse [foo-gahss]. This weapon is banned according to the Ottawa Treaty, which was credited in large part to Jody Williams with the support of Princess Diana. This weapon continues to cause major problems in Angola even though the Angolan Civil War ended in 2002. The use of this weapon has decreased the last few years, but there has been an increase in the use of improvised explosive devices. Name this weapon that often causes damage after a war is over because it is buried in the ground and can explode.

Answer: landmines [or anti-personnel mines or blast mines or fragmentation mines]

9. This character at first claims to be William Thompson from Ohio when he goes to visit his uncle and aunt Silas and Sally Phelps, and he later claims to be his own half-brother. When a girl tears a book page, this character accepts the blame, causing him to get flayed by Mr. Dobbins. This character gets lost in McDougal's Cave with that girl, Becky Thatcher. This character gets other kids to give him things for the privilege of white-washing a fence. Name this close friend of Huckleberry Finn in novels written by Mark Twain.

Answer: Tom Sawyer [accept either]

10. Dynamic viscosity can be expressed as this quantity times time. The dynamic type of this quantity equals $\frac{1}{2}$ times density times speed squared, and it can be used as a term in Bernoulli's [bair-NOO-lee'z] principle. For a column of water, this quantity is calculated as density times gravitational field strength times height. In a confined incompressible fluid, this quantity is transmitted throughout the fluid according to Pascal's principle. Name this quantity equal to force per area that can be measured in pascals or atmospheres.

Answer: pressure

Check the score.

11. Though the Egyptian god Mont was often depicted with a falcon head, this kind of animal would be considered an incarnation of Mont if it were white with black markings. In Sumerian mythology, Enkidu throws a leg from one of these animals at Ishtar after Enkidu and Gilgamesh kill the animal, which was sent by Inanna. In Greek mythology, Pasiphaë [puh-SIFF-uh-ee] fell in love with one of these animals from Crete, leading to the creation of the Minotaur. Name this animal that is often used to represent the zodiac sign Taurus.

Answer: bulls [prompt on steer(s) or ox(en) or cattle; do not accept “cow(s)” or “kine”; accept Bull of Heaven or Cretan bull]

12. This leader was the first person to use the Praetorian [pree-TOR-ee-un] Guard in Rome during peace-time, and he started using them as bodyguards and secret police. This leader originally wanted to be succeeded by his nephew Marcus Claudius Marcellus, but his nephew died young and this person was succeeded by his stepson Tiberius. This person, Mark Antony, and Marcus Lepidus [LEP-ih-duss] formed the Second Triumvirate, and he eventually became the first Roman Emperor. Name this great-nephew and adopted son of Julius Caesar.

Answer: Augustus Caesar [or Octavian or Gaius Octavius or Gaius Julius Caesar; prompt on Caesar; do not prompt on “Julius Caesar”]

13. *The Golden Notebook* opens in this city, and in that book, Anna refers to a bunch of Americans living in this city as “the Colony”. That novel is by Doris Lessing, who moved to this city after spending her childhood in Iran and Southern Rhodesia. Gibreel and Saladin meet on a flight from Mumbai to this city at the beginning of Salman Rushdie’s *The Satanic Verses*. After growing up in Australia, P. L. Travers moved to this city and made it the setting for the *Mary Poppins* books. J. M. Barrie moved from Scotland to this city and made it the setting of *Peter Pan*. Name this major city that, along with Paris, is referred to in the title of Charles Dickens’ *A Tale of Two Cities*.

Answer: London

14. Because of the release of sodium ions, this planet often appears to have an orange-yellow tail. This planet has a large impact basin called Caloris Planitia [plan-EE-shuh] that is surrounded by the Caloris Montes [kuh-LOR-iss MON-teez] mountains. This planet is the only one in our solar system with essentially no atmosphere. Some of the early evidence supporting general relativity theory was that general relativity explains the precession of this planet. Name this planet that orbits the Sun every 88 Earth days, is the smallest planet, and is the closest planet to the Sun.

Answer: Mercury

15. Otto Klemperer’s recording of this symphony is on the *Voyager* spacecrafts’ Golden Records. Despite beginning in a different key, this symphony ends with a long crescendo into several measures of chords in C major. This symphony begins with three eighth-note G’s dropping to a half-note E and then three eighth-note F’s dropping to a D. Those notes are this symphony’s “Fate” motif, which is also called the “short-short-short-long” motif. Name this symphony by Ludwig van Beethoven.

Answer: Beethoven’s Symphony No. 5 [or Beethoven’s Fifth Symphony; prompt on partial answers; accept just 5 or Fifth after the end]

Check the score.

16. This country, and to a lesser extent its eastern neighbor, have a tradition called *bacha posh* [BAH-chuh pawsh] in which a family with no sons treats one of its daughters like a boy. In 2021, this country's television station T.O.L.O. depicted women being violently stopped from marching to this country's presidential palace. This country's president, Ashraf Ghani, fled to the U.A.E. in August 2021, which is when the United States evacuated over 100,000 people from this country. Name this country now controlled by the Taliban.

Answer: (Islamic Emirate of) Afghanistan [or Jomhuri-ye Eslami-ye Afghanistan]

17. Credit for writing this document is sometimes given to William Brewster, though it may have been written by John Carver, who was the first person to sign it. The last surviving signer of this document was John Alden, whose name was just under that of Myles Standish. This document replaced an earlier agreement made with the Virginia Company that was discarded because the mission was too far north. This document was signed on board its namesake ship, which was docked at the end of Cape Cod. Name this 1620 document signed by Puritans and the people who traveled with them.

Answer: Mayflower Compact [or Agreement Between the Settlers of New Plymouth; prompt on the Mayflower]

18. At one point in this play, Peter refers to three musicians as Simon Catling, Hugh Rebeck, and James Soundpost while asking them why music is said to have a silver sound. In the next scene in this play, Balthasar says "I saw her laid low in her kindred's vault", causing a man to go to an apothecary [uh-PAH-thuh-"carry"] after asking if there are any letters from the friar. In this play's next scene, Friar Laurence says that a woman will wake up in three hours. Name this William Shakespeare play about star-crossed lovers that ends in a tomb belonging to the Capulets.

Answer: *The Tragedy of Romeo and Juliet*

19. This metallic element activates lysyl ["LIE"-sill] oxidase, which catalyzes precursors of collagen. Because of its appearance, partly purified forms of this metal element are called the "blister" form of it. Because of its tensile strength, this element is generally preferred over aluminum for electrical wiring, and about half of the human usage of this element is in electrical wires. The carbonate of this element is called verdigris [VER-duh-greess] and sometimes forms a green layer around substances made of this metal, including the Statue of Liberty. This element is combined with tin to form bronze. Name this element that has been mostly replaced by zinc in pennies.

Answer: copper [accept Cu]

20. In an opera by this composer, the aria “Loobvee vsyay vozrastee pokornee” is sung by Gremin, who is married to Tatyana, whom the title character loves. That opera, based on an Alexander Pushkin novel, is this composer’s *Eugene Onegin*. This composer’s longest ballet involves a rivalry between the Lilac Fairy and Carabosse [kah-ruh-bohss] over the fate of Princess Aurora. That ballet, which this composer finished in 1889, is *The Sleeping Beauty*. This composer also wrote a ballet in which Clara travels to the Land of Sweets, which is ruled by the Sugar Plum Fairy. Name this Russian composer of *The Nutcracker*.

Answer: Pyotr Ilyich Tchaikovsky [or Peter Tchaikovsky]

This is the end of regulation. Check the score. If it is tied, proceed to overtime tossups. If it is not tied, the game is over.

- ^{TB}21. The person who stopped the Earl of Warwick at Montargis [mawn-tar-zhee] was often called the “Bastard of” this city. A battle that took place while this city was under attack was won by John Fastolf over John Stewart of Darnley, and it became known as the Battle of the Herrings. Two months after the fighting in this city ended, the French were able to recapture Reims [remz]. While this city was being attacked, a famous meeting occurred at Chinon [shee-noh] when a young woman was able to recognize a hiding king. Name this site of an unsuccessful siege in 1428 and 1429 in which the French were saved by Joan of Arc.

Answer: Orléans [or-lee-awn], Loiret, France [accept Siege of Orléans or Battle of Orléans]

If the score is still tied, continue. If it is not tied, the game is over.

- ^{TB}22. Performing this operation on the roots of a quadratic gives the opposite of the middle coefficient divided by the leading coefficient. This operation is often applied to two vectors by either drawing a parallelogram or by drawing the vectors tip-to-tail. A series is made by applying this operation to the terms of a sequence, which can be represented using sigma notation. Repeatedly applying this operation to the same number is equivalent to multiplication. Name this operation that is the inverse of subtraction.

Answer: addition or adding or summation or plus

If the score is still tied, continue. If it is not tied, the game is over.

- ^{TB}23. The uppercase version of this letter looks the same as an uppercase Greek upsilon [“UP”-sih-lahn]. The symbol for both Chinese and Japanese currencies is this letter with two horizontal lines drawn across it. This letter indicates the vertical axis on a two-dimensional graph. This letter represents a chromosome that, typically, males have but females do not have. This letter can act as a vowel or a consonant. Name this letter between ‘X’ and ‘Z’.

Answer: y

There are no more overtime questions available. If the score is still tied, contact the control room for further instructions. If it is not tied, the game is over.