

Delta Burke 2014
Round 2

1. Algorithms for this process can be tested with the Canterbury or Calgary corpora. One method of this process that takes Big O of $n \log n$ time uses a binary tree built from the bottom up to create a prefix code. Another algorithm for this process requires a dictionary that contains a list of repeating patterns. Huffman coding and the Lempel-Ziv algorithm are methods of this process, whose lossless type is exemplified by the ZIP file format. For 10 points, name this process in which the amount of storage space required for data is decreased by changing its format.

ANSWER: data compression [or source coding; or bit-rate reduction]

2. This condition has been exacerbated in the US by a growth in assortative mating, the tendency of people to marry those with similar educational achievement. During the 2012 election Mitt Romney said on *The Today Show* that it was “fine to talk about” this situation “in quiet rooms,” accusing President Obama’s emphasis on this topic as the “politics of envy.” This condition is emblematic of capitalism according to a 2014 best-seller by French economist Thomas Piketty. At its highest levels in the US since the Great Depression, FTP what is this condition which is defined by the gap between the highest earners and the lowest earners in a society?

ANSWER: income inequality or disparity (accept “wealth inequality” before “earners” in last sentence)

3. John XXI was the only pope ever born in this city, which names a treaty signed in 2007 that amended the EU and EC treaties. This city is home to the Monastery of Sao Vicente de Fora, where many members of the House of Braganza are buried. This city's 25th of April Bridge was originally named for Antonio Salazar, but now commemorates the Carnation Revolution against the Estado Novo regime. In this city, the Marquis of Pombal supervised the rebuilding efforts after a 1755 earthquake. For 10 points, name this city on the Tagus that is the capital of Portugal.

ANSWER: Lisbon [or Lisboa]

4. This author wrote “This loaf’s big with its yeasty rising” in a poem that begins “I’m a riddle in nine syllables” and is generically titled “Metaphors.” One poem by this author ends with a reference to the mythical phoenix: “Out of the ash/I rise with my red hair/And I eat men like air.” Another poem describes a “black shoe” in which the speaker has “lived like a foot”; the title addressee of that poem is “big as a Frisco seal” and called “Panzer man,” leading to the observation that “Every woman adores a fascist.” FTP what author of the poems “Lady Lazarus” and “Daddy” killed herself in 1963?

ANSWER: Sylvia Plath

5. A tenor in this opera compares the title character to a figure from a painted screen in “Amore o grilo.” That character in this opera promises to return to the title character “when the robins nest.” A motif based on “The Star-Spangled Banner” is heard in this opera during the aria “Dovunque al mondo.” The character Sharpless is a consul in this opera, whose title character imagines the return of her husband Pinkerton in the aria “Un bel di.” This opera ends with Cio-Cio-San [*cho-cho-sahn*] committing suicide. For 10 points, name this Giacomo Puccini opera set in Japan.

ANSWER: Madame Butterfly [or Madama Butterfly]

6. Gems and precious metals grown on trees on one of these locations in Chinese Mythology is called Penglai. The Cambodian temple complex Angkor Wat is modeled on one of these locations, which in Hinduism was the home of the Trimurti, called Meru. The Oracle of Delphi was housed on one of these locations; another was the home of the Muses in Greek myth. Ida and Parnassus are, FTP, what landforms, the most famous of which is the home of the Greek gods, Olympus?

ANSWER: mountains

7. This author used chemistry to explain human relations in *Elective Affinities*, while in another work by this author, the Duke of Alba sentences the titular Count to death. This author of *Egmont* wrote a book about a character who is introduced to the works of Shakespeare by Jarno and whose “Journeyman Years” follow a book about that character’s “Apprenticeship.” This creator of Wilhelm Meister wrote about another character who reads the poetry of Ossian to Lotte, and later kills himself with Albert’s gun. In another work by this author, the title character marries Helen of Troy and is aided by Mephistopheles. FTP, name this German author of *The Sorrows of Young Werther* and *Faust*.

ANSWER: Johann Wolfgang von Goethe

8. Deborah Jin used the element symbolized by this letter to create the first fermionic condensate. Cronin and Fitch discovered CP violation in a type of meson named for this letter, which also provides an alternate name for a type of beta decay called electron capture. The proportionality constant in Coulomb's law and the spring constant in Hooke's law are both represented by this letter, which is used to symbolize a unit on a certain absolute temperature scale. For 10 points, name this letter that abbreviates a prefix used in the metric system meaning one thousand.

ANSWER: k

9. This US president’s vice-president, Daniel Tompkins, is the only 19th-century VP to serve two full terms. While serving his presidential predecessor as an unconfirmed Secretary of War, this man drew up plans for a 30,000-man invasion of Canada. In 1818 this man ordered his Secretary of State to find a way to purchase Florida, leading to the Adams-Onís Treaty. The lack of partisan rancor in his first term has been dubbed “The Era of Good Feelings.” FTP name this US president whose threat to Europeans not to interfere in America’s sphere of influence is known as his namesake “doctrine.”

ANSWER: James Monroe

10. Bertrand Russell wrote that the perceptual experience of these entities provides as much of a sense of their intrinsic nature as people can expect. David Hume’s argument that humans may have ideas independent of relevant sensations is presented in an argument named for a “missing” one of these. Nelson Goodman’s “new riddle of induction” depends on the assumption that fictional types of these, “bleen” and “grue,” are time-dependent. FTP what is this phenomenon observed by Sir Isaac Newton after breaking white light with a prism?

ANSWER: color

11. In the preface to one edition of this work, omitted from later editions, its author claims that “the genius of the United States is . . . always in its common people.” That philosophy is illustrated by the lines “The mason singing his [song] as he makes ready for work . . . [and] the ploughboy’s on his way in the morning,” which come from its poem “I Hear America Singing.” The later section of this work titled “Calamus” contains much of this work’s erotic imagery; other sections include “Children of Adam” and “Drum-Taps,” the latter of which contains poems written during the US Civil War. FTP what is this poetry collection including works like “Crossing Brooklyn Ferry” and “Song of Myself,” by Walt Whitman?

ANSWER: Leaves of Grass

12. This album provided a majority of the songs for the 2014 program of the Colts drum corps. A song on this album that begins in 7/4 time ends with Henry McCullough saying “I don’t know, I was really drunk at the time.” Clare Torry provided some caterwauling for this album, whose song “Time” begins with some ringing clocks, and whose song “Money” begins with the sound of a cash register. Some thematic similarities can be seen while watching *The Wizard of Oz* and listening to this album, which includes a prism on its cover. For 10 points, name this Pink Floyd album.

ANSWER: The Dark Side of the Moon

13. This non-numerical quantity appears in the numerator of Black's equation for calculating mean time to failure. Marcus theory of electron transfer involves a parabolic approximation of this quantity. A plot of the natural log of k versus one over T has a slope equal to this quantity divided by the gas constant. The rate constant equals the frequency factor times e raised to the negative value of this quantity divided by RT in the Arrhenius equation. For 10 points, name this quantity that is lowered by catalysts and is the minimum energy needed for chemical reactions to occur.

ANSWER: activation energy [or E sub a; or (Gibbs) free energy of activation]

14. One dissenting opinion to this policy was presented in the recently unearthed Ringle Report. This program was first suggested by John L. DeWitt. This policy used centers located at Heart Mountain and Tule Lake. This policy was implemented by Executive Order 9066, and it was upheld in the Supreme Court case *Korematsu v. United States*. Implemented due to fears of disloyalty after the attacks on Pearl Harbor, FTP, identify this WWII policy of forced relocation of many American citizens based solely on their Asian ancestry.

ANSWER: Japanese-American internment (accept clear-knowledge equivalents)

15. Adherents of the Bahai faith participate in this practice during their month of Ala. The Talmud directs Jews to do this to commemorate the destruction of the First and Second Temples, and in Hebrew this practice is called tzomot. Devout Catholics between the ages of 18 and 59 are obliged to do this on Ash Wednesday and Good Friday. The visual sighting of the crescent moon inaugurates the best-known example of this religious practice. FTP sawm is Arabic for what practice associated in Islam with Ramadan?

ANSWER: fasting (accept obvious equivalents, like "not eating")

16. A phrase meaning "beauty adorns virtue" is inscribed on a scroll on the reverse side of a portrait by this artist that includes a juniper tree in the background. This artist depicted Cecilia Gallerani wearing a coiffure [*kwah-FYOOR*] and holding a certain mustelid. This painter of Ginevra de Benci and *Lady with an Ermine* created a work in Milan in the refectory of the Santa Maria delle Grazie that centers on Jesus Christ, who is surrounded by four groups of three apostles each. A famous drawing by this man depicts a man inside a circle and square. FTP, name this Italian artist of *Vitruvian Man* and *The Last Supper*.

ANSWER: Leonardo da Vinci [accept either]

17. Early in this novel, the protagonist is awakened from a dream about the "Golden Country" in which a girl disrobes and runs toward him by the high-pitched whistle announcing it's time for the exercise program called "The Physical Jerks." The protagonist of this work sees his later romantic interest attack the screen during one of the daily iterations of the Two Minutes Hate, at which Emmanuel Goldstein is reviled as an enemy of the state. The protagonist of this work and Julia are arrested and sent to the Ministry of Love, where O'Brien tortures Winston Smith. FTP what novel by George Orwell describes Oceania under the control of Big Brother?

ANSWER: 1984

18. John Man's book about this location, subtitled "Tracking the Desert," includes chapters on snow leopards and the "Three Beauties" national park. The explorer Roy Chapman Andrews discovered dinosaur eggs at the Flaming Cliffs in this desert, where the fossils of a velociraptor and protoceratops locked in combat were also discovered. This cold desert, which is home to some wild Bactrian camels, is located south of Ulan Bator and southeast of the Tian Shan and Altai mountains. FTP, name this large Asian desert located in China and Mongolia.

ANSWER: Gobi Desert

19. This region's prehistory occurred during the Jeulmun and Mumun periods, the latter of which was referred to as this region's "Bronze Age." It's not China, but the Heavenly Horse Tomb was built during

the middle of its Three Kingdoms period, which included the Goguryeo, Silla, and Baekje. One empire in this region won the Battle of Noryang Point and adopted Confucianism under Sejong the Great. That kingdom was defended against a Japanese invasion by Admiral Yi Sun-Sin and his Turtle Ships. FTP, name this peninsula once ruled by the Choson dynasty that is currently divided along the 38th parallel between countries with capitals at Pyongyang and Seoul.

ANSWER: Korea (don't accept or prompt on "North" or "South" Korea, or other such distinctions)

20. This process, which can be inhibited by Actinomycin D, is initiated when the sigma factor is released. One method of terminating this process involves the formation of a GC-rich hairpin loop followed by a series of uracils. The other main method of terminating this process in prokaryotes makes use of the rho factor, which displaces RNA polymerase. In eukaryotes, this process is followed by modifications such as the addition of a 5-prime cap or a poly-A tail. For 10 points, name this process that converts double-stranded DNA into single-stranded messenger RNA.

ANSWER: transcription [do NOT accept "translation"]

Delta Burke 2014
Round 2 Bonuses

1. This group's name literally means "Western education is forbidden." For 10 points each:

[10] Name this group that kidnapped 276 girls from a school in Chibok in April of 2014.

ANSWER: Boko Haram

[10] Boko Haram is based in the northeast portion of this African country.

ANSWER: Nigeria

[10] This hash tag was used by Michelle Obama and others to raise awareness of the kidnapping.

ANSWER: #BringBackOurGirls

2. Created in 1888, this painting includes a bouquet of pink flowers located on a bar in front of a red wall in addition to four gas lights that hang from the ceiling. For 10 points each:

[10] Name this painting whose titular establishment also contains a billiards table.

ANSWER: The Night Cafe [or Le cafe de nuit]

[10] *The Night Cafe* was painted by this Dutchman, who also created *The Starry Night*.

ANSWER: Vincent van Gogh

[10] In a famous portrait, van Gogh depicted this man with a "heartbroken expression." He rests his head on his right hand, and his left hand is near a foxglove plant, which is used in medicine.

ANSWER: Dr. Gachet [or Paul-Ferdinand Gachet]

3. In the lecture "The Two Cultures," the scientist and author C. P. Snow said that being able to describe this law is the scientific equivalent of having read a work of Shakespeare. FTPE:

[10] Name this law that states the entropy of a thermally isolated system never decreases.

ANSWER: second law of thermodynamics [prompt on partial answer]

[10] This imaginary creature violates the second law of thermodynamics by sorting faster than average molecules from slower than average molecules without adding energy to the system.

ANSWER: Maxwell's demon

[10] This man's namesake statement of the second law of thermodynamics says there is no process whose only effect is the transfer of heat from a colder body to a hotter body. Along with a Frenchman, he names an equation used to compute the slope of the vapor pressure curve.

ANSWER: Rudolf Clausius

4. U.S. struggles with this nation in the 1790s were called the Quasi War. FTPE:

[10] The Convention of 1800, signed by Talleyrand, ended US hostilities with what country?

ANSWER: France

[10] Earlier US-French negotiations were suspended after an American delegation was asked to provide a bribe to three French officials designated by these pseudonyms.

ANSWER: XYZ (Affair)

[10] The three members of the American delegation included John Marshall, Elbridge Gerry, and this South Carolinian, who famously said "No, no, not a sixpence."

ANSWER: Charles Cotesworth Pinckney

5. According to the texts left by a gypsy traveler, the first member of this family is tied to a tree, while the last is being eaten by ants. FTPE:

[10] What is the surname of this central family of the novel *One Hundred Years of Solitude*?

ANSWER: Buendia

[10] This creator of the Buendia family also wrote *Love in the Time of Cholera*.

ANSWER: Gabriel Garcia-Marquez

[10] The gypsy mentioned in the lead-in is this character who brings a flying carpet to Macondo.

ANSWER: Melquiades

6. It runs about a mile and quarter from the Place de la Concorde, and on its eastern end is the Petit Palais, residence of French presidents. FTPE:

[10] What broad avenue in Paris is famous for its shops and gardens?

ANSWER: Champs-Elysees (shomp-eleesay, Frenchie!)

[10] At the Place de Charles de Gaulle on the eastern end of the Champs-Elysees is this giant arch, a monument to French war dead.

ANSWER: Arc de Triomphe

[10] The Champs-Elysees neatly divides the 8th of these 20 administrative districts of Paris.

ANSWER: arrondissements (air-on-dees-mont)

7. Answer the following about rivers turning red with blood, for 10 points each.

[10] After the 1258 siege and sack of this capital of the Abbasid Caliphate by Hulagu Khan, the Tigris River not only turned red from blood, but also black from the ink of books.

ANSWER: Baghdad

[10] The awesomely named Battle of Blood River occurred in this country between Voortrekkers, who suffered three casualties, and the Zulu Kingdom, which suffered more than 3,000 deaths.

ANSWER: South Africa

[10] This man, the grandson of Chandragupta Maurya who enjoyed erecting pillars, converted to Buddhism after the Kalinga War, during which the Daya River turned red with blood.

ANSWER: Ashoka [or Asoka]

8. Ralph Leighton collected many stories about this "Curious Character," whose namesake three-volume "Lectures on Physics" can be found for free on the Caltech website. FTPE:

[10] Name this physicist who developed the path integral formulation, and whose namesake diagrams can be used to represent interactions involving subatomic particles.

ANSWER: Richard Feynman

[10] Feynman and two others won the Nobel Prize for their work on this theory, which was able to accurately calculate the Lamb shift and the anomalous magnetic moment of the electron.

ANSWER: QED [or quantum electrodynamics]

[10] Feynman was a member of the Rogers Commission, which investigated the 1986 destruction of this Space Shuttle shortly after launch due to the failure of its O-rings in cold weather.

ANSWER: Challenger

9. Seshat is the only Egyptian goddess depicted engaging in this activity. FTPE:

[10] Seshat's husband Thoth was patron of what action, as shown by his depiction doing it with a stylus?

ANSWER: writing

[10] Greek myth suggests this Phoenician prince, the brother of Europa, husband of Harmonia, and founder of Thebes, invented the Greek alphabet.

ANSWER: Cadmus

[10] Itzamna is sometimes considered the creator of writing in the myth system of this Mesoamerican people with a culture centered at Chichen Itza.

ANSWER: Mayans

10. Identify these key words used in Emily Dickinson poems FTPE:

[10] The speaker of one Dickinson poem is a "debauchee of dew" and "inebriate of air" who has tasted a type of this drink "never brewed."

ANSWER: "liquor" (no prompting)

[10] This type of household pest "interpose[s] itself "with blue uncertain stumbling buzz" between the speaker and "the light" as he is dying in another Dickinson poem.

ANSWER: "fly"

[10] The penultimate line of Dickinson's "Safe in Their Alabaster Chambers" describes how "diadems drop" and this type of Italian ruler "surrender[s]" to death.

ANSWER: doge

11. This instrument is similar to the kakaki found in Africa and the dung chen in Tibet. FTPE:

[10] Name this valved brass instrument that is often included in mariachi bands.

ANSWER: trumpet [or trompeta]

[10] The note A-flat is most often played on the trumpet by pressing down these valves.

ANSWER: second and third [both required; accept synonyms]

[10] A trumpet asks "The Perennial Question of Existence" in a piece by this composer, whose other works include *Central Park in the Dark* and *Three Places in New England*.

ANSWER: Charles Ives

12. Haiti was the site of an outbreak of this disease in 2010, and it can be caused by ingesting water contaminated with a bacterium from the *Vibrio* genus. For 10 points each:

[10] Name this intestinal disease whose symptoms include vomiting and watery diarrhea.

ANSWER: cholera

[10] This man, sometimes called the "father of epidemiology," created a map of London that showed a 1854 cholera outbreak was caused by the Broad Street water pump.

ANSWER: John Snow

[10] Heterozygous carriers of the mutation for this disease possess resistance to cholera. This disease, which is diagnosed by measuring the concentration of chloride in sweat, is caused by a mutation in a transmembrane conductance regulator gene. It results in mucus buildup in the lungs.

ANSWER: cystic fibrosis [or CF]

13. Answer these questions about an economic concept, FTPE.

[10] Introduced in a 1934 report to Congress, what principle is defined as "an aggregate measure of production equal to the sum of the gross values added of all resident institutional units engaged in production?"

ANSWER: Gross Domestic Product

[10] GDP was an important factor in what July, 1944 conference in New Hampshire which developed the International Monetary Fund?

ANSWER: Bretton Woods Conference

[10] One factor GDP does NOT take into account is business generated by what type of economy, where transactions are conducted illegally and without informing the government in any way?

ANSWER: black market or underground economy or informal economy [accept equivalents]

14. The Keating-Owen Act was the first legislation addressing this issue. FTPE:

[10] That act outlawed interstate commerce in goods made by what type of people in hopes that more would get an education?

ANSWER: children (accept equivalents)

[10] This president signed the Keating-Owen Child Labor Act into law in 1916 after lobbying for it.

ANSWER: Woodrow Wilson

[10] The Keating-Owen Act was found unconstitutional by the Supreme Court less than a year later in this decision of 1917.

ANSWER: Hammer v. Dagenhart (accept either)

15. In this work, a character is killed because he is discovered to be wearing the belt of Pallas. FTPE:

[10] Name this epic poem that begins “Arma virumque cano” and describes a Trojan prince who abandons a queen of Carthage, resulting in her suicide.

ANSWER: Aeneid

[10] This man, whose *Georgics* spend some time discussing bees and apiculture, wrote the *Aeneid*.

ANSWER: Virgil

[10] This character from *The Aeneid* writes prophecies on oak leaves that she places at the opening of her cave, and guides Aeneas to the Underworld to speak with his father, Anchises.

ANSWER: the Cumaean Sibyl

16. Examples of this type of problem include Buridan’s Ass, in which a donkey stands exactly midway between a stack of hay and a pail of water. FTPE:

[10] Name this kind of philosophical problem, in which a statement contradicts itself but can still technically be true.

ANSWER: paradoxes

[10] This student of Parmenides formulated a series of classical paradoxes to demonstrate the impossibility of motion, one of which uses the example of an arrow in flight to show that at any instant the arrow is at rest since it is neither moving to where it is nor moving to where it is not.

ANSWER: Zeno of Elea

[10] Another of Zeno’s paradoxes involves a race between this mythological hero and a tortoise, where this hero can never catch the tortoise if it has a ten meter head start.

ANSWER: Achilles

17. In this novel, Mick Kelly wants to be a pianist, but works at Woolworth to help her family. FTPE:

[10] Name this novel that is partly set in a cafe owned by Biff Brannon, and reaches its climax when the deaf-mute John Singer kills himself after Spiros Antonopoulous dies in a mental asylum.

ANSWER: *The Heart Is a Lonely Hunter*

[10] *The Heart Is a Lonely Hunter* was a Southern Gothic novel written by this female author, whose other works include *The Member of the Wedding* and *The Ballad of the Sad Cafe*.

ANSWER: Carson McCullers

[10] *The Heart Is a Lonely Hunter* is set in this state. Other books set in this southern state include *Midnight in the Garden of Good and Evil* and *Gone with the Wind*.

ANSWER: Georgia

18. Answer some questions about Biblical people FTPE.

[10] This tribe fought the Israelites frequently, the most notable incident being the loss of their great warrior, Goliath, against a young David.

ANSWER: Philistines

[10] This Jewish leader beat thirty Philistines to death with a donkey’s jawbone after setting fire to their

crops.

ANSWER: Samson

[10] Samson's is the last tale in this Biblical book, which includes other title figures like Deborah and Gideon.

ANSWER: The Book of Judges

19. Answer the following the revolutions in Mexico in the early 20th century, for 10 points each.

[10] The Mexican Revolution of 1910 was fought against this autocrat who served as President for the better part of thirty years. This man had originally taken power with the slogan of "No Re-Election," and formulated the Plan of Tuxtepec.

ANSWER: Porfirio Diaz

[10] Diaz was succeeded by Francisco Madero, who lost power in a 1913 coup led by Victoriano Huerta and was assassinated during a period that would come to be known by this name.

ANSWER: the Ten Tragic Days (or La Decena Tragica)

[10] In 1926 the government of Plutarco Calles fought the Cristero War against the Catholic Church, who made use of Feminine Brigades named for this "Maid of Orleans."

ANSWER: St. Joan of Arc (or Santa Juana de Arco, because they spoke Spanish)

20. It was surrounded by Panthalassa and was formed around three hundred million years ago. FTPE:

[10] Name this supercontinent that eventually fragmented into Gondwana and Laurasia.

ANSWER: Pangaea

[10] This body of water was named by Eduard Suess for a figure from Greek myth. Dwarf dinosaurs lived on Hateg Island in this ocean, which existed between Gondwana and Laurasia.

ANSWER: Tethys Ocean [or Sea]

[10] This era saw the formation of the Tethys Ocean during its Triassic period. This era, which is known as the "Age of Reptiles," also included the Jurassic and Cretaceous periods.

ANSWER: Mesozoic Era