

SOLUTIONS TO HOMEWORK SET 4

PHYS2414 FALL 2005

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Solutions to Homework Set 4, PHYS2414, Fall 2005

Question 1:

Calculate the work done by the gravitational force on a 2.0 kg mass as it falls from a height of 10.0 m to the ground.

Answer:

Work done by gravity = $-mgh = -(2.0 \text{ kg})(9.8 \text{ m/s}^2)(10.0 \text{ m}) = \mathbf{-196 \text{ J}}$

Question 2:

A 5.0 kg block is sliding down a frictionless inclined plane with an angle of 30° to the horizontal. What is the acceleration of the block?

Answer:

$ma = mg\sin(30^\circ)$ $a = (5.0 \text{ kg})(9.8 \text{ m/s}^2)\sin(30^\circ) = \mathbf{4.9 \text{ m/s}^2}$

Question 3:

A force of 100 N is applied to a 20 kg object at rest on a horizontal frictionless surface. What is the speed of the object after 5.0 seconds?

Answer:

$v = u + at$ $v = 0 \text{ m/s} + (100 \text{ N} / 20 \text{ kg})(5.0 \text{ s}) = \mathbf{25 \text{ m/s}}$

Question 4:

A 10 kg mass is connected to a spring with a spring constant of 100 N/m. The spring is stretched 0.20 m from its equilibrium position and released. What is the maximum speed of the mass?

Answer:

Maximum kinetic energy = $\frac{1}{2} mv^2$ Maximum elastic potential energy = $\frac{1}{2} kx^2 = \frac{1}{2} (100 \text{ N/m})(0.20 \text{ m})^2 = 2 \text{ J}$ Therefore, $2 \text{ J} = \frac{1}{2} mv^2$ $v = \sqrt{4 \text{ J} / 10 \text{ kg}} = \mathbf{0.63 \text{ m/s}}$

Question 5:

A 2.0 kg block is attached to a spring with a spring constant of 500 N/m. The block is pulled 0.10 m from its equilibrium position and released. What is the period of oscillation?

Answer:

Period = $2\pi \sqrt{m/k}$ $T = 2\pi \sqrt{2.0 \text{ kg} / 500 \text{ N/m}} = \mathbf{0.63 \text{ s}}$

System Programming PPT by Dhamdhere: A Comprehensive Overview**Introduction**

System programming forms the foundation of computer systems, enabling efficient and reliable interactions between hardware and software. In a recent PPT by Dhamdhere, various aspects of system programming were addressed, highlighting its significance and key concepts.

Question 1: What is the role of a system programmer?

Answer: System programmers play a crucial role in developing and maintaining low-level software that interacts directly with computer hardware. They work on operating systems, compilers, and computer architecture, ensuring efficient system functioning.

Question 2: What are the challenges faced in system programming?

Answer: System programmers encounter challenges related to system complexity, hardware architecture variations, and security threats. They must navigate these complexities while maintaining system reliability and performance.

Question 3: Explain the importance of system calls.

Answer: System calls serve as an interface between user-level programs and the operating system kernel. They allow user programs to access kernel privileges and perform privileged operations, such as file access, memory allocation, and process creation.

Question 4: Describe the concept of virtual memory.

Answer: Virtual memory is a memory management technique that allows programs to access memory addresses that exceed the physical memory available. It simulates a larger memory space by dynamically swapping portions of memory between physical RAM and storage devices.

Question 5: How do multi-threaded applications work?

Answer: Multi-threaded applications divide tasks into multiple threads, which execute concurrently. Threads share the same memory space but have their own execution stack. This approach enhances performance by allowing independent code execution and efficient multitasking.

Conclusion

Dhamdhere's PPT on system programming provided valuable insights into the complexities and challenges of this field. By understanding the concepts presented, programmers can develop robust and efficient low-level software that forms the backbone of modern computer systems.

The Curious Incident of the Dog in the Night-Time: Exploring Autism and Social Perception

Introduction

Mark Haddon's award-winning novel, "The Curious Incident of the Dog in the Night-Time," offers a unique perspective on the world through the eyes of Christopher Boone, a 15-year-old with autism. The book has captivated readers worldwide with its exploration of autism, social perception, and the challenges faced by individuals on the spectrum.

Christopher's Journey: Understanding Autism

Question: How does Christopher's perspective on the world differ from that of others?

Answer: Christopher's autism shapes his perception of the world. He experiences sensory sensitivities, difficulty with social interactions, and adherence to routines. His unique perspective offers insight into the challenges faced by individuals with autism, highlighting the importance of understanding and acceptance.

The Incident and its Significance

Question: Why is the incident of the dog's death significant to Christopher?

Answer: The curious incident with the dog in the nighttime propels Christopher on a journey of self-discovery and understanding. By investigating the dog's murder, he confronts his fears and limitations, while also gaining a greater awareness of the complexities of life.

Social Perception and Relationships

Question: How does Christopher's autism affect his relationships with others?

Answer: Christopher's autism creates barriers in his ability to interact with others. He struggles to understand social cues, interpret emotions, and form meaningful connections. The novel explores the complexities of communication and the challenges faced by individuals with autism in navigating social situations.

Families and Support

Question: How does Christopher's family cope with his autism?

Answer: Christopher's family provides love and support, while also struggling to understand his unique needs. His father is initially distant but eventually realizes the importance of embracing Christopher for who he is. The novel emphasizes the crucial role of family in supporting individuals with autism.

Overcoming Challenges and Finding Acceptance

Question: What does Christopher's journey ultimately reveal about overcoming challenges and finding acceptance?

Answer: Christopher's journey is a testament to the resilience and determination of individuals with autism. Despite his challenges, he perseveres, learns from his experiences, and finds acceptance from those around him. "The Curious Incident of the Dog in the Night-Time" underscores the importance of embracing differences and understanding that everyone has unique strengths and contributions to make.

How long does it take to read The Tempest? The average reader, reading at a speed of 300 WPM, would take 1 hour and 28 minutes to read The Tempest by William Shakespeare.

How long is the Tempest Shakespeare play? (Approximate running time: 2 hours, 45 minutes, with one intermission.) Watch The Tempest in a special Theatre on Film watch party!

How many pages are in Tempest?

How many pages is Shakespeare: The Tempest?

Why is The Tempest controversial? Shakespeare's "The Tempest" (1610-1611) is one of the controversial plays regarding whether to be placed in the purview of colonialism or anti-colonialism. The bard sketches two antithetical characters in the course of the play, Prospero and Caliban, who form the two extremes of the self against the other dichotomy.

What is the main message of The Tempest? There are many themes in The Tempest. Explore the main themes of freedom, empathy and forgiveness and nature versus nurture looking at how they affect characters and influence the story.

What is the main plot of The Tempest? The Tempest Summary. Prospero uses magic to conjure a storm and torment the survivors of a shipwreck, including the King of Naples and Prospero's treacherous brother, Antonio. Prospero's slave, Caliban, plots to rid himself of his master, but is thwarted by Prospero's spirit-servant Ariel.

What grade do you read The Tempest?

What is the point of The Tempest? Shakespeare weaves the theme of treason throughout The Tempest. The first instance of treason occurred in the play's prehistory, when Antonio conspired with King Alonso to assassinate Prospero and succeed him as the new Duke of Milan. The attempt to kill Prospero was both political treason and brotherly betrayal.

Why is The Tempest so good? One of the most powerful features of the form Shakespeare crafted in The Tempest is that this detailed, complex narrative, told us in the first part of the play, keeps reappearing within the play's action.

Did The Tempest have a happy ending? At the happy ending of the Tempest, Prospero brings the kind back together with his son, and finds Miranda's true love and punishes the bad duke and frees Ariel and becomes a duke himself again. Everyone - except Caliban - is happy, and everyone is forgiven, and everyone is fine, and they all sail away on calm seas.

What is the first line of The Tempest? 1 Scene I. On a ship at sea: a tempestuous noise of thunder and lightning heard.

Is The Tempest a masterpiece? 'The Tempest': A timeless masterpiece of literature and theater. "The Tempest" by William Shakespeare concludes with Prospero, the protagonist, asking for forgiveness on behalf of the characters in the play. He breaks the fourth wall by addressing the audience directly, creating a sense of intimacy.

What is the shortest Shakespeare book? The longest play is Hamlet, which is the only Shakespeare play with more than thirty thousand words, and the shortest is The Comedy of Errors, which is the only play with fewer than fifteen thousand words. Shakespeare's 37 plays have an average word count of 22.6 thousand words per play.

What grade is The Tempest? The Tempest - Shakespeare: ELA Grades 10-12 - LibGuides at University of Lethbridge.

Why is Tempest banned? “The Tempest,” one of the playwright's classics, is among the books removed, as teachers were urged to stay away from any works where “race, ethnicity and oppression are central themes,” the website Salon reported.

Is The Tempest about slavery? In The Tempest slavery is literal, and Prospero is a slavemaster. True, Prospero forces Prince Ferdinand to pile heavy logs as a kind of “wooden slavery” (3.1. 62), but only briefly and to show his power.

What is the moral of The Tempest? One is the value of freedom, including the idea that freedom can sometimes be found in service. Granting freedom to the spirit Ariel is an important feature of this theme. The other major theme is forgiveness. Prospero forgives multiple characters who have previously wronged him, including his brother Antonio.

What is the deeper meaning of The Tempest? The Tempest has been put to varied interpretations, from those that see it as a fable of art and creation, with Prospero representing Shakespeare, and Prospero's renunciation of magic signaling Shakespeare's farewell to the stage, to interpretations that consider it an allegory of Europeans colonizing foreign lands.

What is The Tempest trying to say? THEME OF BETRAYAL Prospero's deep sense of betrayal drives much of the plot of The Tempest. He tells Miranda in Act 1 Scene 2 the story of how his brother Antonio betrayed him, leading to their exile from Milan. It is Prospero's desire for revenge that brings Antonio, Alonso and the others to the island.

Why is The Tempest special? The Tempest is unlike any other play in Shakespeare's body of work. It takes place all in one day; it is filled with magic and spirits; it revisits many themes Shakespeare has tackled before; and, it focuses on Prospero, a main character who is totally in control of his own story.

What gender is Ariel in The Tempest? Ariel is widely viewed as a male character, although this view has wavered over the years, especially in the Restoration when,

for the most part, women played the role.

What happens to Ariel at the end of The Tempest? Ariel performs magic on Prospero's behalf throughout the play, ultimately hoping to win his freedom from servitude. Prospero frees him at the end of the play, allowing him to continue living on the island in peace.

What is the main point of The Tempest? The change in Prospero from planning everything to serve his revenge, to deciding not to punish any of his enemies, is the key emotional journey of the play, the calming of his own 'tempest'. However, for a lot of the action Prospero is wholly focused on tormenting his enemies.

How long does Tempest take? It takes up to 28 working days from receipt of order to process, mount and despatch your photographs. All photographs are delivered via Royal Mail or DPD.

Is The Tempest Shakespeare's shortest play? The Tempest is Shakespeare's third shortest play, at 17,233 words. But even shorter are A Midsummer Night's Dream at 16,511 words and The Comedy of Errors at 14,701 words. 2009 production of The Tempest.

What grade do you read The Tempest?

Is Tempest harder than Merchant of Venice? In terms of complexity, "The Tempest" can be more challenging due to its use of magical elements, multiple subplots, and intricate character relationships. The play requires a keen understanding of Shakespearean language and the ability to portray the nuances of the characters effectively.

Is The Tempest hard to play? The Tempest is a difficult play to stage. The courtly characters can feel flat and one dimensional, inspired by ambition and greed, but with little context in which those vices can develop. Here they are all ably played and differentiated so that each stands out as an individual.

What time period does The Tempest take place? Answer and Explanation: The Tempest seems to be set in a fantastic version of Shakespeare's own time period (late sixteenth and early seventeenth centuries), as the politics and forms of entertainment within the play resemble those without.

How many days is The Tempest? The Tempest is one of two plays of Shakespeare's that observes Aristotle's Unities of Time, Place and Action – meaning the story takes place within one day, in one location, and every incident in the play contributes to the main plot.

What did Shakespeare leave to his wife? When William Shakespeare died he famously left his wife Anne only one thing: their 'second best bed'.

Who was Shakespeare's wife? Who was Shakespeare's Wife? William Shakespeare married Anne Hathaway in November 1582 and they remained married until Shakespeare's death. At the time of their marriage William was 18, while Anne was 26—and pregnant with their first child.

Is The Tempest scary? Violence & Scariness. No real fighting, but there are threats and shouting. Sebastian and Antonio draw their swords in an attempt to kill their king while he sleeps. There are also some frightening images when Ariel appears as a "black angel of death" and as Prospera conjures up some of her black magic.

What age group is The Tempest for? i rate this title IFFY for ages 14+ What to watch out for * Messages: The main thrust of The Tempest is revenge, as Prospera tries to get even with those who wronged her years before. She plays cruel tricks on her visitors and eventually gets everything she wants.

Does The Tempest have a happy ending? At the happy ending of the Tempest, Prospero brings the kind back together with his son, and finds Miranda's true love and punishes the bad duke and frees Ariel and becomes a duke himself again. Everyone - except Caliban - is happy, and everyone is forgiven, and everyone is fine, and they all sail away on calm seas.

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What is the hardest Shakespeare play to study? There are a number of plays that are difficult for a modern reader to understand as they were intended to be

understood in their time: King Lear, Romeo And Juliet, The Merchant Of Venice notably.

Why is Tempest so special? 'The Tempest' Is a Magical Play As previously noted, "The Tempest" is largely considered Shakespeare's most magical work—and with good reason. The play opens with a huge magical storm capable of shipwrecking the main cast, and the survivors are magically distributed across the island.

Is The Tempest a masterpiece? 'The Tempest': A timeless masterpiece of literature and theater. "The Tempest" by William Shakespeare concludes with Prospero, the protagonist, asking for forgiveness on behalf of the characters in the play. He breaks the fourth wall by addressing the audience directly, creating a sense of intimacy.

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