Last

Finally

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Praise to God

الحمد لله

Resources

Course Resources

- https://github.com/helghareeb/gfx19
- https://videos.haitham.ws
- https://youtube.com/user/helghareeb
- https://t.me/joinchat/AAAAAFdPiGqxrkQC1fJUsw

Lectures Summary

Lectures Summary

Lecture-01

Lecture-01

- Course MetaData
- Course Description
- Course Syllabus
- What is This Course About
- What is This Course is Not About
- Mechanics
- Lab
- Resources

Lectures Summary

Lecture-02

Lecture-02

- Computer Graphics
- Interactive Computer Graphics
- Modern Computer Graphics
  - Hardware
  - Software
  - Algorithms
  - Graphics Subsystems
- Rendering
  - Wire-frame
  - Polygonal Modeling
  - Scanline Rendering
  - Rasterization
  - Ray Tracing

Lectures Summary

Lecture-03

Lecture-03

- Environmental Evolution
  - Character Displays
  - Vector Display
  - 2D vs. 3D
  - High-end PCs
- Graphics Display Hardware
- Application Distinctions
  - Sample-based Graphics
  - Geometry-based Graphics
- Decomposition of Geometric Models

Lectures Summary

Lecture-04

Lecture-04

- Game Programming
- Different Types of Games
- First Person Shooter
- Strategy Games
- Simulation Games

Lectures Summary

Lecture-05

- Scalable Vector Graphics - SVG
- SVGs are Not Images
- Benefits
- Comparing Different Images' Formats
- Basic Examples
- Implementing SVG Shapes

Lectures Summary

Lecture-06

Lecture-06

- NumPy Arrays
- What is an Image?
- NumPy and Images
- Matplotlib Color Maps
- Color Values
- Image Basics of OpenCV
- RGB vs. BGR
- Drawing on Images
- Saving an Image
- Freehand Drawing

Lectures Summary

Lecture-07

Lecture-07

- Color Models
  - RGB
  - CMYK
  - HSL and HSV
- Image Processing
  - Classification
  - Feature Extraction
  - Pattern Recognition
  - Projection
- Cont.

Lecture-07

- Image Editing
    - ...
    - Image Size Alteration
    - ...
    - Histogram
    - Noise Reduction
    - ...
    - Perspective Control and Distortion
    - Lens Correction
    - ...
    - Image Warping
    - ...

Lectures Summary

Lecture-08

Lecture-08

- Excluded from Exam
- Real world Applications and Demos
  - Read from File (image, video)
  - Read from Webcam
  - Drawing and Writing on images
  - Basic Image Operations
  - Add Images and Threshold
  - Blending Images
  - Bitwise Operators
  - Trackbars
  - Object Detection using HSV
  - Basic Thresholding
  - Cont.

Lecture-08

- Real world Applications and Demos (Cont.)
  - Digital Image Transformations
  - Basic Geometric Transformations
  - Perspective Transformation
  - Affine Transformation
  - Adaptive Thresholding
  - Smoothing Images
  - Morphological Transformations (image and video)
  - Edge Detection (image and video)
  - Find and Draw Contours
  - Template Matching
  - Lines Detection (image and video)
  - Corners Detection

Lectures Summary

Lecture-09

Lecture-09

- Introduction
- Run-Length Encoding (RLE)
    - Problem-01
    - Problem-02
    - Solutions
- Lempel-Ziv Compressor Family
    - LZ-77
    - LZ-78 (Dictionary Representation)

Lectures Summary

Lecture-10

Lecture-10

- Computer Vision
  - Related Fields
  - Distinctions
  - Applications
  - Tasks
  - Typical Functions
  - Image Understanding Systems

Lectures Summary

Lecture-11

Lecture-11

- Human Computer Interaction
    - Introduction
    - Definition
    - Unexpected Problems
    - Goals for Computers
    - Related Fields
    - Design and Principles
    - Thirteen Principles of Display Design
    - Brain Computer Interface

Lectures Summary

Lecture-12

Lecture-12

- Summary
- Statistics
- What Next?

Statistics

Statistics

Telegram

Telegram

- 646 Subscribers

Statistics

Quizzes

Quizzes

- Quiz-01: 373 - Total Points: 130
- Quiz-02: 536 - Total Points: 40
- Quiz-03: 534 - Total Points: 35
- Quiz-04: 553 - Total Points: 10
- Quiz-05: 545 - Total Points: 50
- Quiz-06: 661 - Total Points: 16
- Quiz-07: 578 - Total Points: 9

Average	Median	Range
63.54 / 130 points	62 / 130 points	27 - 108 points

Total points distribution
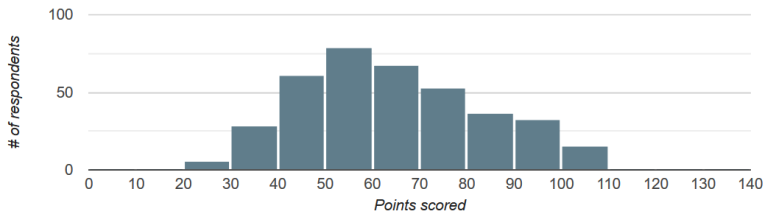
Average	Median	Range
28.27 / 40 points	29 / 40 points	9 - 40 points

Total points distribution
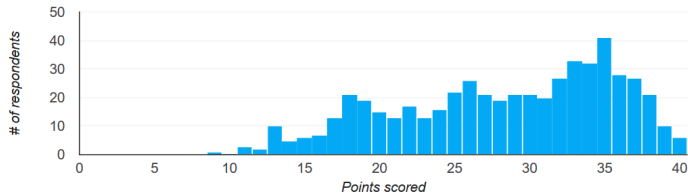
Average	Median	Range
24.61 / 35 points	25 / 35 points	10 - 35 points

Total points distribution
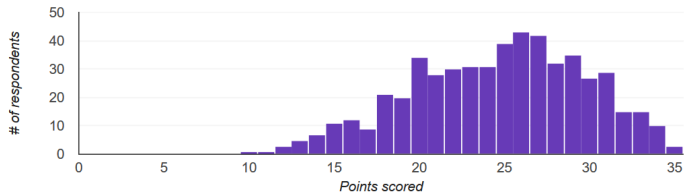
Average	Median	Range
8.72 / 10 points	10 / 10 points	3 - 10 points

Total points distribution
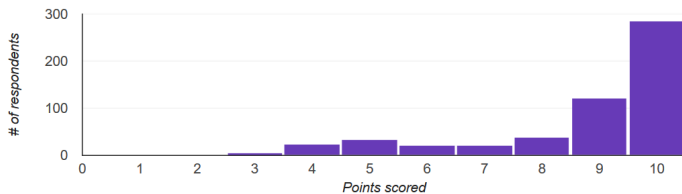
Average	Median	Range
38.47 / 50 points	39 / 50 points	18 - 50 points

Total points distribution
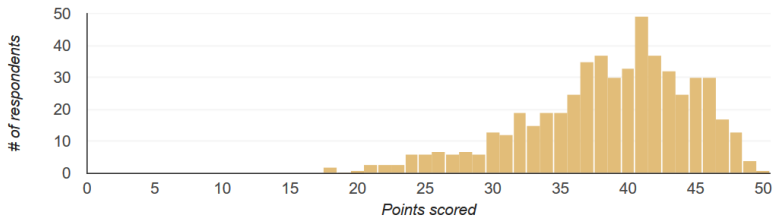
Average	Median	Range
12.19 / 16 points	12 / 16 points	4 - 16 points

Total points distribution
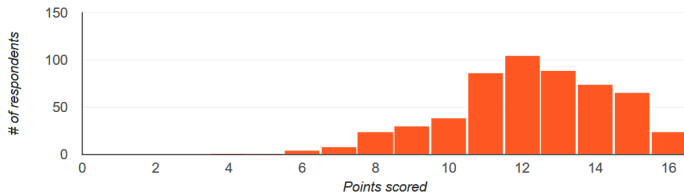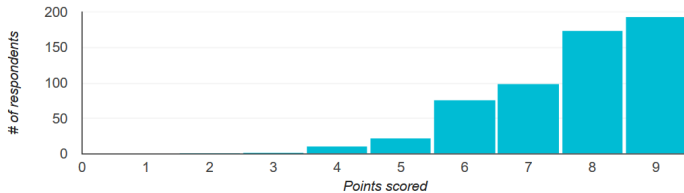
Average	Median	Range
7.68 / 9 points	8 / 9 points	2 - 9 points

Total points distribution

Statistics

Video Lectures

- Current Subscribers: 357
- Watch Time (Minutes): 70.1K
- Views: 9.6K

What Next?

Course Mechanics

- Attend Oral and Practical Exam - Next Week
- Follow Telegram for Announcements and Updates

Career

- Take a Closer Look on Lectures 6,8,10,11
- Computer Vision
- Augmented Reality
- Game Programming

Thank You!

https://www.haitham.ws