



COMP 125: Introduction

Week 08, Midterm Solutions



Midterms

- Solutions - Written
- Solutions - Practical
- Statistics
- Next

Written - Problem 1

```
a = 5  
b = 10  
c = -5  
d = 0
```

```
t = true  
f = false
```

```
a > b      = False
```

```
d >= a     = False
```

```
f == f     = True
```

```
t == 1     = True
```

```
t > f      = True
```

```
t && t      = True
```

```
t && f      = False
```

```
f && f      = False
```

```
f || f     = False
```

```
t || f     = True
```

```
(t || f) && t      = True
```

```
(t && t) && t      = True
```

```
(f || f) || f     = False
```

```
(t || f) && f     = False
```

Written - Problem 2

```
z = 500
if (z > 1000) {
    print("A")
}
else if (z > 25) && (z < 400) {
    print("B")
}
else {
    print("C")
}
```

“C”

Written - Problem 2

```
for (i = 0; i < 10; i = i + 1){  
    print(i)  
}
```

0, 1, 2, 3, 4, 5, 6, 7, 8, 9

```
for (i = 0; i < 10; i = i + 1){  
    print(i * 2)  
}
```

0, 2, 4, 6, 8, 10, 12, 14, 16, 18

Outputs: _____

Written - Problem 2

```
for (i = 0; i < 10; i = i + 1){  
    if (i == 2) || (i == 5) {  
        print(i * 10)  
    }  
    else {  
        print(i)  
    }  
}
```

0, 1, 20, 3, 4, 50, 6, 7, 8, 9

Written - Problem 3

Discuss the innovation that allowed computers to get both significantly smaller and more powerful.

- Transistors
- Good to mention the size
- Good to mention when (50s)

Written - Problem 4

Discuss mainframe computers. You might consider discussing when they were popular, their architecture, how they were used, and how they scale.

- Large machine in a different room
- Popular in the 60s-80s
- Still around today
- Terminals (many-user, illusion of exclusivity)
- Scaling is easy - bring in more mainframe

Written - Problem 5

Discuss how the move from large, purpose-built computers to mainframe computers allowed programmers, users, and computer administrators to become more specialized professions.

- No longer require electrical engineering or mechanical knowledge
- Allowed programmers to program, engineers to engineer, administrators to administrate
- Opened computers further to the general user (accountants, bankers, brokers, etc)
- Specialization meant faster progress for each field and ease of adoption

Written - Problem 6

Discuss supercomputers. You might consider discussing how users interact with them, how they scale, and their purpose compared to other types of computers.

- Large machines
- Changed through the years (special-purpose to general and now back to specialized)
- Intended for massive computations, science, etc
- Scale by building more rows
- User interacts by writing programs elsewhere and submitting jobs

Written - Problem 7

Discuss the PC. Consider discussing the architecture of a PC, how they scale, and when they became popular.

- Personal computers
- Took off in the 90s, everywhere in the 00s
- Everything on one board/box
- Scaling is negligible - replace or upgrade (via replacement)

Written - Problem 8

Describe the basic functionality of the internet. Specifically include ISPs, DNS, and packets. Feel free to draw a picture, but include a paragraph to describe what you're showing.

- Internet allows data to be sent globally
- Packets = unit of information
- ISP = internet service provider, allow access
- DNS = domain name service, navigation

Written - Problem 9

What was the purpose of ARPANET/NSFNET, and how did this differ from the Internet (World-Wide Web, or WWW)?

- ARPANET/NSFNET = research institutions and military, simply data, intra-US
- WWW = global (CERN), hypertext (pages of a book)

Written - Problem 10

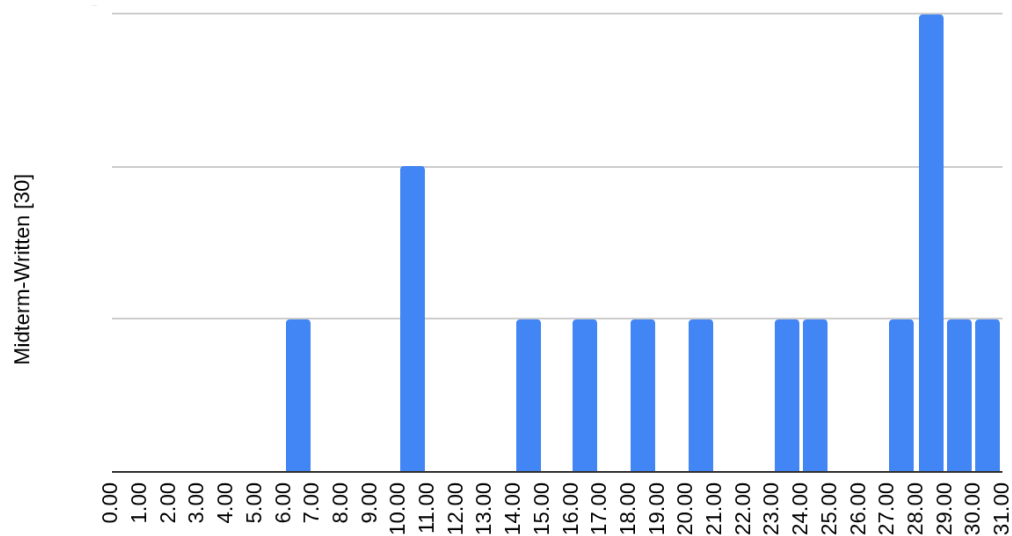
How has the use of the Internet changed over the decades? Consider discussing web browsers and interactivity.

- Early: just data, phone lines
- Mid: hypertext, pages of a book, links and text (no dynamism)
- Now: interactive
- Could also discuss the client/server interaction:
 - Then: data sent, rendered locally, interaction required communication
 - Now: mini version of web server local, interaction might not require communication

Written Midterm: Statistics

- 30 total points
 - Rounded up for problems 1 and 2

Midterm-Written [30]



Practical - Problem 1

5 pts:

1. Put in a comment at the top of the file your LUC username and “Problem 1”
2. Store three variables: your name, your favorite number, and your favorite food
3. Print these three variables to the console
4. Breakdown:
 - a. string
 - b. number
 - c. string
 - d. print each
 - e. runs without breaking

Practical - Problem 2

5 pts:

1. Put in a comment at the top of the file your LUC username and “Problem 2”
2. Put three circles on the canvas. Ensure they do not touch. Set them to different colors.
3. breakdown:
 - a. circle 1
 - b. circle 2
 - c. circle 3
 - d. colors, not touching
 - e. runs without breaking

Practical - Problem 3

10 pts:

1. Put in a comment at the top of the file your LUC username and “Problem 3”
2. Use a for loop to place 5 circles on the canvas. Ensure they do not touch. Set them to different colors.
3. breakdown:
 - a. for loop
 - b. one point for each circle
 - c. different colors
 - d. not touching
 - e. runs without breaking

Practical - Problem 4

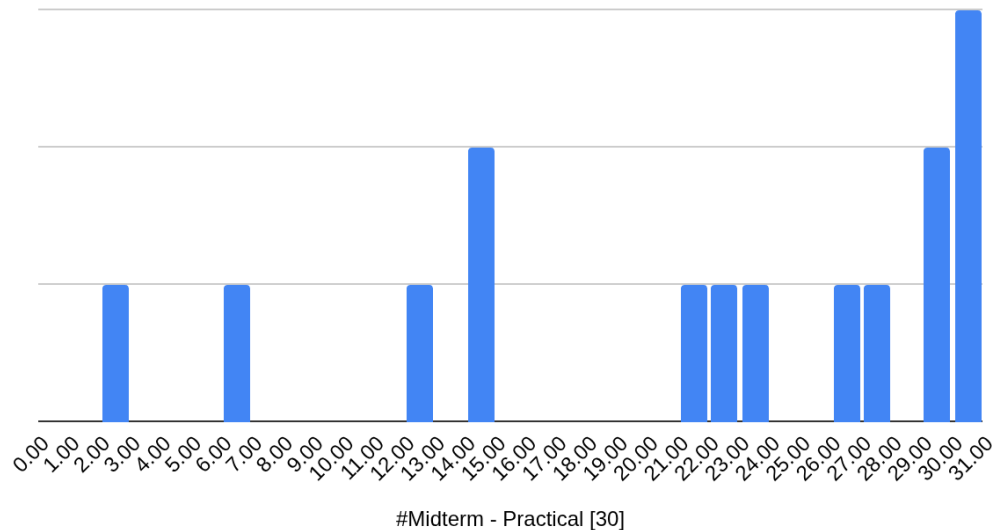
10 pts:

1. Put in a comment at the top of the file your LUC username and “Problem 4”
2. Create an input box.
3. Store the value from the input box in a variable called “value”
4. Make sure “value” is between zero and ten. If “value” is less than zero, set it to zero. If “value” is greater than ten, set it to ten.
5. Place the number stored in “value” to the canvas
6. breakdown:
 - a. input box made 2 pts
 - b. stored value in “value” (draw loop) 2 pts
 - c. use if/elif to set lower bound of value 2 pts
 - d. use if/elif to set upper bound of value 2 pts
 - e. use “text” to put the number in the canvas somewhere 1 pt
 - f. runs 1 pt

Practical Midterm: Statistics

- 30 total points

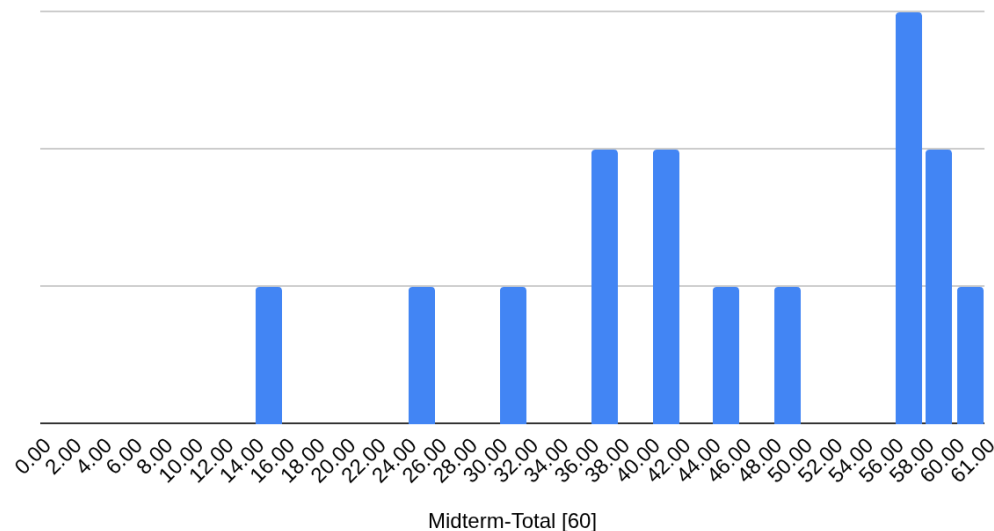
Histogram of #Midterm - Practical [30]



Practical Midterm: Statistics

- 60 total points
- 10% curve applied to lower-scoring half

Histogram of Midterm-Total [60]

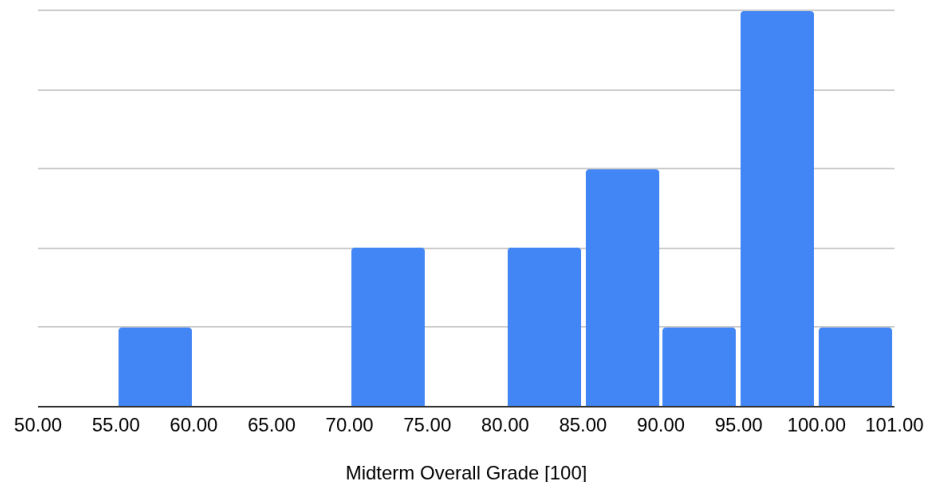


Overall Midterm Grades

- 10 pts: Attendance
- 15 pts: Labs
 - Completion up until now
- 20 pts: Midterm

You guys are doing great!

Histogram of Midterm Overall Grade [100]



Up Next

- Interactivity
- Layering
- Project
- Midterm II:
 - Likely presentation-based + practical
- Final
 - Same format as Midterm I (written + practical)
- Fun Topics:
 - History of cyberattacks
 - Ethical AI
 - =)