Software Companies internship preparation:

CP/DSA:

1. **https://www.interviewbit.com/courses/programming/ (BEST)**
2. **https://leetcode.com (Practice questions daily and start giving weekly/biweekly contests)**
3. **Codeforces Topic-wise**
   https://codeforces.com/blog/entry/55274
4. **Codechef Topic-wise**
   https://discuss.codechef.com/t/data-structures-and-algorithms/6599
5. **CP sheet:**
   a. **Striver's SDE Sheet**
      https://takeuforward.org/interviews/strivers-sde-sheet-top-coding-interview-problems/
   b. **Striver's CP Sheet**
      https://takeuforward.org/interview-experience/strivers-cp-sheet/
6. **CP Roadmap(with video links and question links):**
   https://docs.google.com/document/d/1N4--AK1rC45rjY-o0JFUwz1jRRc56w_QLurYCimH2Mc/edit#

Good CP Youtube Channels for Beginners:

1. **Striver(take U forward)**
   https://www.youtube.com/c/takeUforward
2. **Luv (IIITA Alumni):** https://www.youtube.com/c/LuvIsMe
3. **Aditya Verma:** https://www.youtube.com/c/AdityaVermaTheProgrammingLord/

If preparing for a specific company: Google the interview experience archives for that company (usually available on GFG), and go through the questions asked and attempt them yourself.

Subjects:

OS:

- **GFG Notes/Videos**
  https://drive.google.com/drive/folders/1A3iK-c6_FHcHOYqh11fP5RvXWhoyOJno?usp=share_link

- **OS Book Slides**
  https://www.os-book.com/OS9/slide-dir/index.html

- **Aman Butterwal Notes**
  https://drive.google.com/file/d/1B_kmekdghu-sO8-eXZ1kc4Xx_YtB8BPM/view

DBMS/SQL:

- **GFG Notes/Videos**
  https://drive.google.com/drive/folders/1A3iK-c6_FHcHOYqh11fP5RvXWhoyOJno?usp=share_link

- **https://www.interviewbit.com/sql-server-interview-questions/**
- **https://www.interviewbit.com/sql-interview-questions/**

CN:

- **GFG Notes/Videos**
  https://drive.google.com/drive/folders/1A3iK-c6_FHcHOYqh11fP5RvXWhoyOJno?usp=share_link

- **Aman Butterwal Notes**
  https://drive.google.com/file/d/1EraWa_yVfFHJqOMG2nG91fbg2g1FHm30/view

OOM:

- **FreeCodeCamp (Single Video which covers everything)**
  https://www.youtube.com/watch?v=wN0x9eZLix4

- **GFG Notes/Videos**
  https://drive.google.com/drive/folders/1A3iK-c6_FHcHOYqh11fP5RvXWhoyOJno?usp=share_link

- **Aman Butterwal Notes**
  https://drive.google.com/file/d/1CljO4lsVcxLXj59X0OMBB5WNhG0fzVOw/view

(Very Imp) Best Last-Minute Notes for DBMS, OS, and CN:
https://www.geeksforgeeks.org/lmns-gq/

Puzzles:

https://www.geeksforgeeks.org/puzzles/

Projects:

You should be well prepared to answer such questions for your projects:

- **Why did you make this project?**
- **Features**
- **Problems/Challenges faced and How did you solve those problems?**
- **Why did you use this tech stack?**
- **NoSQL vs SQL (if you have used MongoDB)**
- **What did you learn from this project?**
- **Explaining use of different concepts like Authentication, Authorization, etc**
- **Any question specific to a functionality or you can be grilled on the code too!**

Consider deploying your project.

CORE ECE INTERN PREPARATION:

Here are some topics that are important and you should have good knowledge of them for cracking internships.

Resources:

- Youtube- NPTEL, NESO, MITOpenCourseWare are the best for gaining an in-depth knowledge of these topics.
- GekesForGeeks and other sites- basic concepts
- Books recommended by professors/syllabus in Core ECE subjects- For practice/in-depth knowledge(refer to curriculum/syllabus).

NOTE: Highlighted topics are the most important ones.

Digital electronics:

1. Basic logic gates
2. Number systems and their conversions
3. K map reductions
4. Combinational circuits
5. Latches
6. Flip flops(Special imp to Master-slave and difference between ff and latch)
7. Counters(both synchronous and asynchronous)
8. Basic concepts of memory(RAM, ROM)

Microprocessors(8086) and Computer Architecture

1. Architecture of 8086
2. Various units and their function
3. Concept of pipelining
4. Memory mapping
5. Memory management(general)

Analog electronics

1. Diodes
2. BJT
3. MOS operation and principles
4. Op-amp circuits

Operating systems

1. OS basics
2. CPU scheduling
3. Process management
4. Memory management
5. File systems

Programming languages

1. Verilog HDL- gives an edge
2. C/C++
3. Python

Projects (Provide you with an added advantage)- On Verilog, SPICE, IoT devices, Robotics. Can use IT projects in this as well(although they wouldn't have as much weight as that of electronics based projects).
(fpga4student.com- for verilog projects. They are a bit high level so for now, stick with easier concepts)

Extra knowledge(optional)

1. Knowledge of microcontrollers like Arduino/Node MCU and various sensors
2. Use of simulation software like Multisim, LT spice, MATLAB, Cadence, etc.
3. Practice logical and analytical reasoning.