Arcesium Experience

Online Technical Round:
3 sections, timer for each section, 25%negative marking
1. Quantitative (15 questions 20 minutes): Easy-Medium, Lengthy (probability, profit-loss, average mean), I was able to solve 7-8 questions in this section.
2. Technical Apti (15 Questions 20 minutes) : Questions from C++, JAVA, data-structures & OOPS concepts. Mostly predicting output, had long codes and many operations on pointer and OOPS(majorly inheritance and dynamic polymorphism). Solved around 9-10 questions.
3. Coding Round (2 questions) :
   a. Given a sequence of N integers and a number K, you need to insert operators between all N numbers such that final output is divisible by K, operators allowed were +, -, /.
      The priority would be + > - > / and expression would be evaluated from left.N < 10
      Eg. N: 1 2 3 3 K: 27
      ANS: 1+2*3*3
      Used a brute force approach for this evaluating all 3^N possibilities, a recursive solution yielded the right answer. But took me longer to code than expected.
   b. You are given a matrix where '#' represents an island whereas '~' represents the sea, you always start from 0,0 which is guaranteed to be an island, you can move only horizontally and vertically and change direction only when you are at some island. You need to return the maximum number of islands that you can reach.

      There wasn't enough time left for me to complete this solution, however, after the test on discussion, I found out a naive DFS approach gave TLE but did pass some cases. This is a DP solution where you need to save the maximum number of islands after an island when traversing from some direction (however I do not know of a guaranteed solution that works)

After this 15 students were shortlisted, judging by list we could figure that there were no sectional cutoffs and that partial marking was done for test-cases as well.

Interview 1st Round:
There were 5 panelists, and at a time 3 parallel interviews were done. All the three students were mostly asked the same questions, I'll be sharing mine, this round was about 15 minutes long.

1. You are given a linked list 1->2->3->4->5->6->7->8->9, you need to reverse it in a group of 4 Output: 4->3->2->1->8->7->6->5->9 I gave him an approach using stack, where you keep filling it until size is 4 and then start popping it until empty, he asked me to write pseudo code for this.

2. You are given a binary tree, having integer number at each node, You need to keep sums of all nodes from root-leaf at that leaf.

   I gave him a recursive solution where you keep pushing sums in the next recursive call, code as well.
3. He changed the previous question, and said now you are given an integer K, you need to tell how many subtrees have a sum equal to K.

   I gave him an answer using a queue, maintaining nodes that sum up to K, you keep inserting while summing <k, and removing if more than k, if it is equal to k then add 1 to count. He was happy and asked me the complexity, I said Time O(N) and memory O(N*K)
4. Can you have an infinite RAM for your CPU, I did not know the answer to this at the time and could only count pros and cons but later learned that it is hardware dependent relating to 32bit or 64bit machines.
5. Explain the steps of compilation. (was expecting more details on linking and loading steps)
6. Polymorphism, static & dynamic, examples. What will happen if the address of the base-class object is assigned to a pointer of a derived class? (if error which error)

At last, he asked me if I had any questions, I asked him how is a new employee pushed into the teams, are preferences considered.
He said they judge freshers during the initial phase and then based on requirements of team they are pushed. However, preferences wouldn't be considered as much.

6 students were selected after this round

Interview 2nd Round:
This round had questions from SQL, DS-Algo & an easy DP question.

1. The interviewer asked about my internship, and gave me a question from a similar scenario that I had worked in there, he gave me an employee table having empid, empname, mgr_id, deptid, amount etc, The question was to get all employee names with their manager having amount more than 8k.

   I gave him a solution using join on the same table itself, he was happy
2. He modified the question introduced a dept table and then asked me to delete all entries from emp_table who have an amount in limits defined by the department.

   I gave him a solution of a nested query and join, he seemed satisfied
3. He asked me to explain all the joins, I used Venn diagrams and examples
4. Check if the given tree is a BST, this is a very common question, I explained him the approach and then I was asked to code it on the paper
5. You are given a binary matrix(1 & 0 only) of size n*m, you need to find the largest maximum sub-matrix having all 1s. I initially gave him an N^3 solution he asked me to

code it. He then evaluated it and said fine asked me to optimize both in time and space, I took some time and gave him an ON^2 solution he was satisfied. He did point out to check for edge cases, I had to run him through few examples. (this is also a common dp question)

6. He asked me about docker, kubernetes, and AWS as I had mentioned them in my resume. Nothing peculiar, He just wanted to check if I really had implemented those.
7. He also asked me the difference between TCP & UDP, their applications and to which OSI layer did they belong to

He was done by this time and asked me if I had any question.
I asked him what technologies do they use, docker and kubernetes or any other tech. He said "we are not using it yet however I can promise that by the year end it would be used extensively as they had been planning this for a long time. He also said that there are at least 4-5 different events when employees are open to find new creative solutions and suggest any new idea/approaches."

After this round 5 were shortlisted

Interview 3rd Round:
This round had many questions from OS, my resume & projects

1. Tell me about yourself
2. Internship
3. He wanted some recent project that I had worked on, so I explained him my minor project
4. He wanted to talk more about 'Vegworld', I walked him through all modules and phases, he asked me about the authentication system and how I was handling it. Wanted me to explain to him about jwt tokens, auth, and access tokens their expiry times and encryption of passwords.
5. Spent some time talking about Django ORMS and databases.
6. He then asked me about the database-connection pool, I said "I do not know about this connection pool", he hinted towards thread pools, I said I do know about thread pool, He wanted me to explain how and why of the thread pool, advantages.
7. He asked me about multithreading and its advantages
8. We also discussed multiprocessing, gave him examples from my ecell-app-project where I had used both multithreading and multiprocessing
9. How many threads can you run at most, I said depends on processors and number of cores, but they weren't satisfied, I also gave points using context-switching, thrashing still wanted me to talk more, I also gave them points from scheduling of the process and its effects
10. Asked me to explain docker and kubernetes and how I used it.
11. Enquired about programming-club as well.

At last, he asked if I had any questions, I said not really, I have been asking questions from last 3 rounds.

(Docker & kubernetes were asked only because i had mentioned them in my resume)

HR Round

My HR Round was done right after 1st tech interview.

1. She asked me to tell about myself
2. what are your plans
3. where do you have offer from before this
4. about my internship and if had an offer from them
5. She also asked me why I do not you want to join those companies
6. why arcesium.

I diverted all my answers to the benefits of a startup culture. She inquired if I wanted to study more, and about my family.

She asked me "What is your dream company". I answered her, "To me, the brand name doesn't matter if I am learning new things & growing I'm happy" she seemed satisfied.

Preparation:

"**GFG**" read all experiences and mark all questions.

Subjects: OS, DBMS, Networking, Compiler, DS & Algo.

For dp questions, I practiced on **SPOJ & Leetcode**

Solved many puzzles from GFG as well

Subjects of the 3rd year are very important and regular practice of coding (you needn't be expert but well practiced)