2017
National
SkillsUSA

Computer Programming Contest

Programming Competition
Contestant Packet

Louisville, KY

June 22, 2017

National Contest Program #1

Food Program

You will write a program to create a screen which will allow the user to enter quantities of items to purchase from your food truck. Taxes are included in the price. You must have a running total of all sales for the day sales.

Item for sale: Hot Dog $2.50

Brat $3.50

Hamburger $5.00

Fries $2.00

Soda $2.00

Water Free

Buttons or choices will include:

Calculate

Clear (allows for another entry, reset to another amount)

Exit

All screens will be clearly labeled with contestant number, program number and title.

All boxes will be clearly labeled.

When you have completed this program put your number and time on the sheet for the first program, the judge will take you in turn for execution of your program to check for correct output. When approved, print out your source code. Clearly mark with your assigned contestant number and hand in to the judges table. Go on to the next program.

National Contest Program #2

Grade Program

You will write a program to create a screen which will allow for the entry of grades for 5 different classes. Each class will keep track of the grades with an average grade to be shown when selected. Output will also include high score and low score for each class. Additionally scores of .5 will be rounded up to the next whole number for the average score. Example a score of 89.5 will be 90 on the final average.

Classes: Programming, Art, Science, Math, and History.

Output will include:

> Class Name
>
> Scores Entered
>
> Current Average
>
> High Score
>
> Low Score

Buttons or choices will include:

> Calculate
>
> Clear (allows for another entry, reset to another amount)
>
> Exit

All screens will be clearly labeled with contestant number, program number and title.

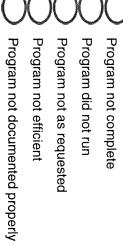All boxes will be clearly labeled.

When you have completed this program put your number and time on the sheet for the second program, the judge will take you in turn for execution of your program to check for correct output. When approved, print out your source code. Clearly mark with your assigned contestant number and hand in to the judges table. Do not leave the area until both of your programs have been demonstrated to the judges.

Computer Programming Scorecard

Contestant Number _____

Items Evaluated	Possible Points	
Program 1: Food:Completeness	55	
Program 1: Food: Correctness of Output	60	Program not complete
Program 1: Food:Validation of Input	60	Program did not run
Program 1: Food:Internal Documentation	50	Program not as requested
Program 1: Food: Quality of Work	50	Program not efficient
Program 1: Efficiency of Code	50	Program not documented properly
Program 2: Quality of Work	50	
Program 2: Efficiency of Code	50	Program not complete
Program 2: Internal Documentation	50	Program did not run
Program 2: Validation of Input	60	Program not as requested
Program 2: Correctness of Output	60	Program not efficient
Program 2: Grade : Completeness	55	Program not documented properly
Interview	100	
Written Test	150	
Résumé	50	
Clothing	50	
Total Possible Points	1,000	

Typical questions you might encounter at this stage break down into three categories:

#1. Cultural

- What excites you about joining our team here?
- What are your hobbies outside of work?
- What do you love about your current job and work environment?
- Describe your ideal company culture.
- What's the most important part of your work environment that will ensure you're successful?
- How would co-workers describe the role you play on the team?
- Tell us a decision you made based on internal or external customer feedback.

#2. Experiential

- Which tools do you like to use for keeping track of requirements?
- What's most important when reviewing another team member's code?
- Describe your coding process from start to finish.
- How do you prepare your code for different kinds of errors?
- What's your preferred language for complex algorithms?
- How do you design scalable applications?
- What project are you most proud of in your career thus far? Why?
- Describe a project that failed. What happened? How did you rebound?

#3. Technical

- What is the difference between a mutex and a semaphore?
- What is multithreaded programming?
- What is the difference between local and global variables?
- What's the difference between local and global variables?
- You have a single-threaded, C standard application that's continuously crashing, but never in the same place. What could be causing the crash?
- What is the difference between a queue and a stack?
- What is a regression test?

- What's an example of a time you helped a non-technical person with a technical problem, and how did you explain it to them? This one is a gem. You immediately understand if the technical person has worked with non-technical people in a meaningful way by the terms they use when describing non-technical people and the explanation itself.
- Have you worked with QA (quality assurance) before? What were your feelings about it and how would you improve the process? Sometimes, a developer can be at odds with their QA team. Understanding if the engineer values QA, and how they handle the process, is important. Ditto for similar questions regarding designers and project managers.
- Have you ever worked in a customer support or client facing role? At larger firms, it's easy for engineers to get siloed and tucked away from end users. Knowing someone has experience interacting with people in a service role can be helpful.
- What are your hobbies? This is a nice opener because it creates a bond with the engineer outside of simply tech. You can see how they talk about something they're passionate about.
- What do you like about your current work environment, and what do you not like about it? This is an opportunity for you to understand the energy of a candidate. I've interviewed a number of candidates that, when given the chance, berate their current employer or make unproductive comments about them. While it's common for people to be unhappy with where they currently are — which is likely why they're interviewing with you in the first place — the way they communicate about it will give you a lot of insight into their personality.

"What are your biggest weaknesses?"

"What are your biggest strengths?"

"Where do you see yourself in five years?"

"What business would you love to start?"

"Out of all the other candidates, why should we hire you?"

"What do you consider to be your biggest professional achievement?"

"Tell me about the last time a co-worker or customer got angry with you. What happened?"

"Describe your dream job."

"What kind of work environment do you like best?"

"Tell me about the toughest decision you had to make in the last six months."

"What is your leadership style?"

"Tell me about a time you disagreed with a decision. What did you do?"

"Tell me how you think other people would describe you."

"What can we expect from you in your first three months?"

"What do you like to do outside of work?"

"Technology is always changing, tell me how you plan to stay current."