SYSTEM PROGRAMMING MIDTERM TEST 2023

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1 1

1.1 Q1

What is the output of the following piece of code?
Answer:A

1.2 Q2

What is the output of the following piece of code?
Answer:C

1.3 Q3

What is the return value of the following function?
Answer:C

1.4 Q4

What is the output of the following piece of code?
Answer:C

1.5 Q5

What is the output of the following piece of code?
Answer:A

1.6 Q6

What is the output of the following piece of code?
Answer:A

1.7 Q7

What is the return value of the following function?
Answer:A

1.8 Q8

What is the output of the following piece of code?
Answer:C

1.9 Q9

What is the output of the following piece of code?
Answer:A

1.10 Q10

What is the value of n after the followiing code is executed?
Answer:B

1.11 Q11

If we have a variable called var of type int, how can we get its address in memory?
Answer:B

1.12 Q12

What is the identifier to print an address with printf?
Answer:C

1.13 Q13

We declare the followiing variable int arr[5];What is the size in memory of the varriable arr?
Answer:E.20 bytes

1.14 Q14

What is the value of n after the following code is executed?
Answer:A

1.15 Q15

What happens when one tries to access an illegal memory location?
Answer:A

1.16 Q16

Is it possible to declare a pointer to a pointer?
Answer:C

1.17 Q17

What is the value of a pointer to a char(on a 64-bit architecture)?
Answer:B

1.18 Q18

We declare the following variable int arr[5];What is the equivalent of typing arr[2]?
Answer:B

1.19 Q19

What is the value of n after the following code is executed?
Answer:A

1.20 Q20

What is the size of a pointer to an int(on a 64-bit architecture)?
Answer:B

1.21 Q21

The process of getting the value that is stored in the memory location pointed to by a pointer is called?
Answer:C

1.22 Q22

What is the value of n after the following code is executed?
Answer:C

2 2

2.1 Q1

Explain what happened in the above code,state the time complexity of the above situation(Use proper terms is important)?

- 1.The main function is called an initial value of 4

- 2.The print function is called with this value(4) as an argument
- 3.inside print function prints the value of nb.(which is 4),increaments by 1 to become 5, checks if it's
- 4.since 5 is less than 10, the print function is called RECURSIVELY with the updated value of nb w
- 5.This process continues and keeps printing and increamenting the value until nb becomes 10.
- 6.When nb reaches 10,the condition in the if statement is no longer true, and the recursion stops.
- So the code will print the numbers from 4 to 9 giving the time complexity to be 0(n),where n is the

2.2 Q2.a

How many bytes will each of the below statements allocate?

- 1.malloc(sizeof(int) * 10).Answer:40 bytes
- 2.malloc(sizeof(unsigned int) * 2).Answer:8 bytes
- 3.malloc((sizeof(char) * 10) + 1).Answer:11 bytes
- 4.malloc(10).Answer:10 bytes
- 5.malloc(sizeof(char) * 10).Answer:10 bytes
- 6.malloc(sizeof(int) * 4).Answer:16 bytes

2.3 Q2.b

What is Valgrind?
Answer:Valgrind is the program used in memory leak dectection

2.4 Q3.a

What will you see on the terminal?
Answer:B

2.5 Q3.b

Answer all the questions

- i.malloc returns a pointer.Answer:B
- ii.malloc returns an address.Answer:B
- iii.The momery space reserved when calling malloc is on what?Answer:A
- iv.You can do this: (char str[] = "Best School" free(str));Answer:B

- v.You can do this: (free("Best School"));Answer:A
- vi.You can do this: (char *s; s = strdup("Best School"); if(s != NULL)free(s)).Answer:B
- vii.What is wrong with this code:(int cp(void)char *s; s = malloc(12); strcpy(s, "Best School"); return(0);).Answer:B

2.6 Q4 Pointers and Addresses

In computer science, a pointer is an object in many programming languages that stores a memory address.
This can be that of another value located in computer memory, or in some causes,that of memory-mapped compter hardware.According to "Wikipedia."
Pointers in C are easy and fun to learn.Some C programming tasks are performed more easly with pointers, and other tasks,such as dynamic memory allocation,cannot be performed without using pointers.
So it becomes necessary to learn pointers to become a perfect C programmer.
Implement a valid method or function that can swap two variables?
Answer:(int a, int b)int temp;temp = a;a = b;b = temp;