**Answer Script**

| Question No. 01 |
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| Update the following code so that the values in array b is ‘x’ more than the corresponding values in array a. You can only write only one line of code inside the loop (in the comment section marked “Write Code Here”). Do not modify anything else. (10)  int n = 10;  int x = 5;  int index = 0;  int a[n] = {12, 7, 3, 71, 2, 43, 38, 23, 45, 22};  int b[n];  for (int i=0; i<n; i++) {  //Write Code Here  } |
| Answer No. 01 |
| int n = 10;  int x = 5;  int index = 0;  int a[n] = {12, 7, 3, 71, 2, 43, 38, 23, 45, 22};  int b[n];  for (int i=0; i<n; i++) {  b[i] = a[i] + x;  } |

| Question No. 02 |
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| char s = “america”  What is wrong with this C statement. Mark the errors and fix them. (4) |
| Answer No. 02 |
| char s[] = "america"; |

| Question No. 03 |
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| Suppose you want to declare an array of size 15 and the elements of the array will be in a geometric progression, the first one starting with 1 and the common ratio being 2. For example, the first few elements of that array will be 1, 2, 4, 8, 16 , … and so on. Write a |
| Answer No. 03 |
| #include <stdio.h>  int main()  {  int ara[15];  ara[0] = 1;  printf("%d \n", ara[0]);  for(int i = 1, j = 0; i < 15; i++, j++)  {  ara[i] = ara[j] \* 2;  printf("%d\n", ara[i]);  }  return 0;  } |

| Question No. 04 |
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| To declare a string, Fahim uses the following code. What will happen in the second and the third statement. Explain. (10)  char a[10];  a[0] = 98;  a[1] = 97;  a[2] = 'n';  a[3] = 'a';  a[4] = 'n';  a[5] = 'a';  a[6] = ‘\0’; |
| Answer No. 04 |
| If the character data-type variable or string contains an integer value then it will change the ASCII value of that integer.  a[0] = 98; it will return us ASCII value b  a[1] = 97; it will return us ASCII value a |

| Question No. 05 |
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| Consider the following code.  char a[10];  char ch = ‘a’;  for(i = 0; i<8;i++)  {  a[i] = ch+8-i;  }  a[8] = ‘\0’;  What will be stored in the given character array ‘a’ of the question after the execution of the block of code? (10) |
| Answer No. 05 |
| #include <stdio.h>  int main()  {  char a[10];  char ch = 'a';  for(int i = 0; i < 8; i++)  {  a[i] = ch + 8 - i;  }  a[8] = '\0';  for(int i = 0; i < 8; i++)  {  printf("%c\n", a[i]);  }  return 0;  } |

| Question No. 06 |
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| How much bytes does an int type array with 12 elements take in memory? (10) |
| Answer No. 06 |
| Each element of size 2 bytes  So size of array is 12  Now,  12\*2 bytes = 24 bytes  The answer is 24 bytes. |

| Question No. 07 |
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| What does lexicographical comparison mean? Explain with examples. How can we order strings in lexicographic order in C? |
| Answer No. 07 |
| Lexicographic ordering means dictionary like ordering on types that have several elements in some defined sequence.  If the first element of a sequence A is less than the first element of a sequence B then A is lexicographically less than B. Likewise, if the first element of A is greater than the first element of B then A is lexicographically greater than B. If the first element of A is equal to the first element of B then the lexicographic order of A and B is determined by the lexicographic order of A's sequence and B's sequence with the first element removed from both sequences. An empty sequence is smaller than a non-empty sequence.  The lexicographic order is commonly used for strings, vector, matrix and color classes.  #include <stdio.h>  int main()  {  char str1[5] = "help";  char str2[5] = "held";    int i = 0;  int cnt = 0;    while(str1[i] != '\0' || str2[i] != '\0')  {  if(str1[i] > str2[i])  {  printf("Str1 is greater than Str2\n");  return 0;  }  else if(str1[i] < str2[i])  {  printf("Str2 is greater than Str1\n");  return 0;  }  else  {  cnt++;  }  i++;  }  printf("Str1 and Str2 is equal\n");  return 0;  } |

| Question No. 08 |
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| What does ASCII value of a character mean? How can you print the ASCII value of a character in C language? (10) |
| Answer No. 08 |
| ASCII (American Standard Code for Information Interchange) is the most common character encoding format for text data in computers and on the internet. In standard ASCII-encoded data, there are unique values for 128 alphabetic, numeric or special additional characters and control codes.  #include <stdio.h>  int main()  {  char c = 'a';  printf("ASCII value of %c = %d", c, c);  return 0;  } |

| Question No. 09 |
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| Explain Bubble Sorting. Suppose you are given an array of integers 12, 7, 9, 1, 3, 73, 11, 15, 62, 19, 4. What will be the sequence of these integers if we run Bubble sort for only 5 iterations? (10) |
| Answer No. 09 |
| #include <stdio.h>  int main()  {  int tmp,ara[11]={12, 7, 9, 1, 3, 73, 11, 15, 62, 19, 4};  for (int i = 0; i<5; i++)  {  for (int j = 0; j <(11-1); j++)  {  if (ara[j]>ara[j+1])  {  tmp = ara[j];  ara[j] = ara[j+1];  ara[j+1]= tmp;  }  }  for (int i = 0; i <11; i++)  {  printf("%d ",ara[i]);  }  printf("\n");  }  return 0;  } |

| Question No. 10 |
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| How can you find the sum of digits of a number? Write a C program that will extract the digits of the given integer number as input and add them to find the required output. For example, if the input is 1235623, then the output will be 22. Because, 1+2+3+5+6+2+3 = 22. (6) |
| Answer No. 10 |
| #include <stdio.h>  int main()  {  int num;  scanf("%d", &num);  int sum = 0;  while(num != 0)  {  sum = sum + (num % 10);  num = num / 10;  }  printf("%d\n", sum);  return 0;  } |

| Question No. 11 |
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| You will be given a 3x3 matrix as input. You need to check whether the matrix is a magic square or not. Magic squares are the matrices which have equal sum along all rows, columns and diagonals. For example,    This is a magic square as you can see all the sums are equal to 15 along all the rows and columns and even the diagonals.  Now,Write a C Program to check the matrix is magic square or not. (10)   | **Sample Input** | **Sample Output** | | --- | --- | | 2 7 6  9 8 1  4 3 5 | NO | | 2 7 6  9 5 1  4 3 8 | YES | |
| Answer No. 11 |
| #include <stdio.h>  int main()  {  int i,j,n=3;  int num1,num2,num3,flag, ara[3][3];  for (i = 0; i <n; i++)  {  for ( j = 0; j<n; j++){  scanf("%d",&ara[i][j]);  }  }  for (i = 0; i<n; i++)  {  num1 = 0;  for (j = 0; j < n; j++)  {  num1 = num1 + ara[i][j];  }  }  num2 = 0;  for (i= 0; i < n; i++)  {  for (j = 0; j<n; j++)  {  if (i == j)  {  num2 = num2 + ara[i][j];  }  }  if (num1 == num2)  {  flag = 1;  }  else  {  flag = 0;  break;  }  }  for (i = 0; i<n; i++)  {  num3 = 0;  for (j = 0; j<n; j++)  {  num3 = num3 + ara[j][i];  }  if (num1 == num3)  {  flag = 1;  }  else  {  flag = 0;  break;  }  }  if (flag == 1)  printf("\nYes");  else  printf("\nNo");  return 0;  } |