Shiv Nadar IoE, Delhi NCR

CSD101: Quizz 2

Monsoon 2022 semester

FM 20, Time 40 minutes

Roll number: _____ Name:_____

- **Answer all questions in blue/ black pen only**
- **Write your answers at the places provided after each question**
- **WRITE YOUR ROLL NUMBER AND NAME AT THE SPACES PROVIDED ABOVE FAILING WHICH THE ANSWER SHEET WILL NOT BE CHECKED**

Q1. **Q.1 True/False:** **[1]**

a) A function can return only a single value
b) We should use recursion over iteration as recursion takes less time to execute.
c) For a recursive function arguments cannot be passed by reference
d) In C, stack is cleaned up by the calling function

Ans. T, F, F, F

Q2. Find the output of the following code fragments: **[2*3=6]**

(i)

```
#include<stdio.h>
void result(int);
int main()
{
        int i=4;
        result(i);
        return 0;
}
void result (int n)
{
  if(n<=0) return;
  if(n%2==0)
        result(n/2);
        printf("%d\n", n*n);
}
```

Ans: 1 **[No partial marking]**
4
16

(ii)

```
#include<stdio.h>
    void main()
        {
```

```
float a = 13.5 ;
float *b, *c ;
b = &a ;
/* suppose address of a is 2000  */
c = b ;
printf ( "\n%u, %u ,%u", &a, b+1, c ) ;
printf ( "\n%f ,%f, %f ,%f ,%f", a,*(&a), *&a, *b,*c );
}
```

Ans: 2000, 2004 (or 2008), 2000 (integer taking 4 bytes)
13.500000 ,13.500000, 13.500000 ,13.500000 ,13.500000
[0.25 for each correct answer]
(iii)

```
#include<stdio.h>
        void main()
        {
        int i = 5, j = 2;
        junk ( &i, &j ) ;
        printf ( "\n%d, %d", j, i ) ;
        }
        junk ( int *i, int *j )
        {
        *i = *i * *i ;
        *j = *j * *j ; }
```

Ans: 4, 25 [1 mark for each correct answer]

Q3. Find out the error(s) in the following code segment. [2]

```
char *c1= “Hello”;
 char c2[ ] = “Hi”;
        c1[0] = ‘F’;
        c2 = c1;
```

Ans: *c1= “Hello”; pointer to a constant string, so changing the string, i.e., c1[0] = ‘F’; is not possible.

char c2[ ] = “Hi”; c2 works as constant pointer to a string, so cannot be reassigned i.e., c2 = c1; is invalid

[Give 1 mark for each error.]

Q4. How many bytes are occupied by the following pointers? (assume integer, float and char hold 4, 4 and 1 byte respectively). [1]

```
int *p;
float *f;
char *c;
```

i. 4, 4, 1
ii. 4, 8, 1
iii. 1, 1, 1
iv. 4, 4, 4

Ans: (iv)

Q5. The Euclid algorithm to compute gcd of two integers (a, b) where a >= b is explained below.

Steps:
GCD(a,b) = GCD (b, a%b) [solve recursively till we reach the base condition]
GCD (a, 0) = a [base condition]

Complete the following recursive function EuclidGCD which uses the above steps to compute the gcd of **a** and **b**.

```
int EuclidGCD (int a, int b)
 {
   ------------------------

 }
```

[2]

Ans: No partial mark

```
int EuclidGCD (int a, int b)
 {
   if(b == 0)
      return a;
  else
     return EuclidGCD (b, a % b);
 }
```

Q6. Fill in the blanks: **[0.5*6=3]**

i. "A" is a _____ whereas 'A' is a _____

ii. A string is terminated with a _____ character which is written as _____

iii. The array char name[15] can consist of maximum _____ characters.

iv. The only integer value that can be assigned to a pointer is _____

Ans:

i. Sting, character
ii. NULL, '\0'
iii. 14
iv. 0 (zero)

Q7. Write a C function which works exactly similar to the strlen() function. In this code segment, you need not write the whole program, only write the function definition. Assume that the header file string.h cannot be used. [3]

Ans:

```
int strlen(char arr[])
{
int count=0;
for(int i=0; arr[i]!='\0'; i++)
        count++;
return count;
}
```

[Please give 1 mark if logic is correct but took array length as input to the function. In all other cases, no partial mark]

Q8. What will be the output of this program: [2]

```
#include <stdio.h>
void fun(int **pptr)
{
  static int q = 10;
  *pptr = &q;
}
int main()
{
  int r = 20;
  int *p = &r;
  fun(&p);
  printf("%d", *p);
  return 0;
}
```

Ans: 10