Shiv Nadar IoE, Delhi NCR

CSD101 Midsem Exam

Monsoon 2022 semester

FM 30, Time 60 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. Study the code below and answer the questions that follow: **[3*2=6]**

```
/*Assume input is positive integer >1*/
void main()
{
 int n;
 scanf("%d",&n);
 printf("%d", func1(n));
}
int func1(int n)
{int m;
 m=n+1;
  while(!func2(m))
   m=m+1;
   return m;}
int func2(int n)
{   int i;
    for(i=2; i<(n/2+1); i++)
         if(n % i == 0)
           return 0;
           return 1;}
```

(a) What will be printed if the input to the program is 14?
(b) How many function calls are required for case (a)?
(c) Give a precise one-line description of what the program is doing?

Answer:

(a) 17

(b) 4

(c) Finding a prime larger than a given integer

Q2. Find the output for the following code segments. **[2*2=4]**

(a)
```
void main()
{ int i=3, j=5;
   for(i=0; i<j; i++);
   j=j-1;
  printf("%d", j); }
```

(b)
```
void main()
{ int i, char c='2'; c++;
```

```
for(i=0; i<2;i++)
c--;
printf("%c",c);}
```

Answer: (a) 4 (b) 1

Q3. Consider the following code segment to point out logical or syntax error. **[3*2=6]**

(a)
```
void main()
{ int i,n;
  for(i=0;i<5;i++)
    n=n+2;
  printf("%d", n);
}
```

(b)
```
void main()
{ int k,n, s=0; n=12;
for(k=5; k>=0;k--)
   s=s+n/k;
printf("%d",s); }
```

(c)
```
void main()
{   int i,s=0,
a[6]={1,2,3,4,5,6};
for(i=0;i<=6;i++)
   s=s+a[i];
printf("%d", s);}
```

Answer:

(a) n is not initialized so it will take garbage value
(b) Division by zero.
(c) Index out of bound

Q4. **[3x1 =3]**

(I) Which of the following operator(s) has right to left associativity?

(a) ! **(b)** && **(c)** = **(d)** +

Ans: c

(II) Mark as True or False.

a. A function can return only a single value
b. Each new C instruction has to be written on a separate line.
c. C programs are converted into machine language with the help of a program called gedit.
d. Nested function calls are maintained by a stack.

Ans: T, F, F, T

(III) Consider the following code segment. What is the output when x=1,y=2;

```
while(x+y<12)
{
  x++;
  y *=2;
}
printf("x = %d y = %d\n",x,y);
```

Ans: x=4, y=16

Q5. Observe the following code segment. Write an equivalent code segment (doing exactly the same task), using a do-while loop, replacing the while loop. 2

```
while(expression)
        statement
```

Ans: do{

```
if(expression)
        statement
```

}while(expression);

Q6. Write an appropriate macro such that it will accept the marks and return “pass” if the marks is more than 60; and “fail” otherwise. 2

Ans: #define grade(marks)(marks>60)?"pass":"fail"

Q7. Rewrite the following if-else construct using a swtich statement. [3]

```
char ch;
int x=0,y=0;
if (ch == ‘a’)
x++;
else
y*=3;
```

Ans:

```
char ch;
    int x=0, y=0;
    switch (ch)
    {
    case ‘a’:
    x++;
    break;
    default:
    y*=3;
    }
```

Q7. The following program computes the number of primes less than the number n by calling a function nPrime(). Complete the missing parts. **(1+3)**

```
#include<stdio.h>
//Write the function prototype here
int main()
```

```
{
int n,d;
scanf(“%d”, &n);
d=nPrime(n);
printf("The number of primes less than %d is %d\n",n,d);
return 0;
}
//Write the function here
```

8. Guess the output.

```c
#include<stdio.h>
int main (void){
int arr[7]={7, 10, 3, 5, 8, 2, 4}, m1, m2, len=7, i;
m1= arr[0];
m2= arr[1];
if(m2>m1) {m2=arr[0] ; m1=arr[1]; }
i=2;
while ( i< len ){
if ( arr[i]>m2) { if ( arr[i]>m1) m1=arr[i] ; }
else m2=arr[i];
i++;
}
printf( "%d\n", m1-m2 );
return 0 ;
}
```

Ans. 8