Quiz 1: Set B

Introduction to Computing and Programming (CSD101)

Max. Marks: 15 **Date: 12-09-2024**

Duration: 35 min.

Name: _____ **Roll No. _____**

1. If integer needs two bytes of storage, then maximum value of signed integer is (1 mark)

(a) $2^{16} - 1$ (b) $2^{15} - 1$ (c) 2^{16} (d) 2^{15}

Solution: B

2. Match the following (2 marks)

:	Input function
\t	Exponential form
scanf	Unary Operator
4.25e-3	Escape sequence
&	Label

Solution:

:	Label
\t	Escape sequence
scanf	Input function
4.25e-3	Exponential form
&	Unary Operator

3. Point out the errors, if any in the following C statements

3.1

(a) Area of circle = 3.14 * r * r; (0.5 mark)

Solution:space in variable name

(b) Vol = a^3 ; (0.5 mark)

Solution:

A^3 is not allowed in program. It should be a*a*a

3.2 (1 mark)

```
#include<stdio.h>
int main(){
   int ch = 'a'+ 'b';
   switch (ch)
   { case 'a':
   case 'b':
      printf("You entered b\n");
      break;
   case 195:
      printf("a in capital letter\n");
      break;
   case 'b' + 'a':
      printf("you entered a and b both\n");
}
}
```

Solution: The ASCII value of 'a' is 97, and the ASCII value of 'b' is 98.

 Therefore, the value of ch becomes 97 + 98 = 195. So, same switch number twice case 195 & case 'b' + 'a'.

4. Evaluate the following expression: (2 marks)

x = y = 5%10<<4/2+1/2

Solution:

x = 20 y = 20

5. What will be output of the following programs:

5.1 (1 mark)

```
#include<stdio.h>
void main(){
int x = 4, y, z;
y = --x;
z = x--;
printf( “%d%d%d\n”, x,y,z);
}
```

Solution: x = 2

y = 3

z = 3

5.2 #include<stdio.h> (1 mark)

```
void main(){
char inchar = 'A';
switch (inchar)
{
case 'A' :
printf ("choice A \n") ;
case 'B' :
printf ("choice B ") ;
case 'C' :
case 'D' :
case 'E' :
default:
printf ("No Choice") ;}}
```

Solution: choice A choice B No Choice

6. What are the various components of computers? (1 mark)

Solution: Hardware, software, users: Motherboard. The motherboard,
CPU/processor. ...
RAM (random access memory) ...
Hard drive, SSDs, OS, other apps etc.

7. Differentiate between while and do-while loops. (1 mark)

Solution: A while loop checks the condition before executing the loop body, so it may not run if the condition is false initially. A do-while loop checks the condition after executing the loop body, ensuring the loop runs at least once.

8. Convert the numbers in the given format

8.1 $(61.45)_{10}$ to $(\ )_2$ (1 mark)

Solution: 111101.0111

8.2 $(6B9.3C)_{16}$ to $(?)_{10}$ (1 marks)

Solution: (1721.234375)10

9.Write a C program to check whether a number is Armstrong number or not (2 marks)

Program:

```
#include <stdio.h>

int main() {

 int num, originalNum, remainder, result = 0;

 printf("Enter a three-digit integer: ");

 scanf("%d", &num);

 originalNum = num;

 while (originalNum != 0) {

remainder = originalNum % 10;

result += remainder * remainder * remainder;

originalNum /= 10;

 }

 if (result == num)

 printf("%d is an Armstrong number.", num);

 else
```

```
 printf("%d is not an Armstrong number.", num);
 return 0; }
```

or

```
#include <stdio.h>
#include <math.h>
int main() {
    int num, originalNum, remainder, result = 0, n = 0;
    // Input from user
    printf("Enter an integer: ");
    scanf("%d", &num);
    originalNum = num;
    // Find the number of digits in num
    while (originalNum != 0) {
        originalNum /= 10;
        ++n;
    }
originalNum = num;
// Calculate the sum of the power of digits
    while (originalNum != 0) {
remainder = originalNum % 10;
        result += pow(remainder, n);
        originalNum /= 10;
    }
    // Check if num is an Armstrong number
    if (result == num)
        printf("%d is an Armstrong number.\n", num);
    else
```

```
        printf("%d is not an Armstrong number.\n", num);
    return 0;
}
```