National University of Computer and Emerging Sciences
Islamabad Campus

Programming Fundamentals (CS1002)

Course Instructor(s):
Jawad Hassan
Section(s):

Sessional-I Exam

Total Time (Hrs): 1
Total Marks: 50
Total Questions: 4

Date: Sep 23, 2024

Roll No _____ Course Section _____ Student Signature _____

Do not write below this line.

Attempt all the questions.

Q1: [CLO 1] *[25 marks]*

Understand the following code segments and write outputs on answer sheet appropriately. ***Note: All codes are errorless.***

1) *[2 marks]*

```
int main()
{
        int i = 10, j = 3, k = 2, n = 5;
        cout << i + j % k - k * n << endl;
        cout << i / n << endl;
}
```

[3 marks]

2)

```
int main()
{
        cout << "Size1  : " << sizeof(8) << endl;
        cout << "Size2  : " << sizeof('8') << endl;
        cout << "Size3  : " << sizeof("8") << endl;
        cout << "Size4  : " << sizeof(8.8) << endl;
        cout << "Size5  : " << sizeof(8.8f) << endl;
        return 0;
}
```

[2 marks]

3)

```
int main()
{
        short found = -1, count = 10;
        if (!found || count-- == 0)
                cout << "Danger" << endl;
                cout << "Result = " << ++count << endl;
}
```

Q3: [CLO 2] **[10 marks]**

For the age of a horse, **Biologist** states that first **three** years of a **horse** age is equal to **7.5** years of a **human** age. After first **three** years, each horse age is equal to **3.5** years of a human age. Your task is to Write a C++ program that calculate a **Horse age in Horse years** when age it is provided in **human years**

Sample program Execution:

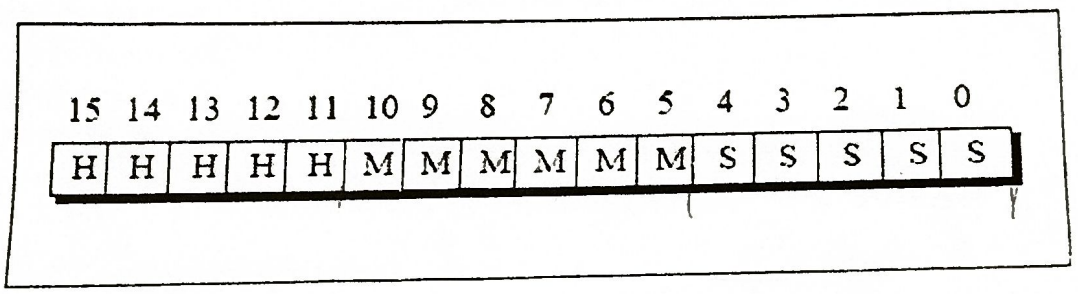
Input a Horse age in Human years: 7

Output: Horse age in Horse years: 36.5

Note: Appropriately define variables, take inputs, write expressions, print outputs and apply all checks when and where required.

Q4: [CLO 2] **[8 marks]**

In order to save disk space Time field in the directory entry is 2 bytes long. Distribution of different bits, which account for hours, minutes and seconds, is given below:



Write a C++ program that take input two-byte time entry and appropriately separates hours, minutes and seconds using **bitwise shift operators** only.

Note: Appropriately define variables, take inputs, write expressions, print outputs and apply all checks when and where required.

Think cleverly.

Best of luck ☺