

CEC 101: Computer Programming

Civil Engineering Autumn 2023-24

Practical 2: Data types and variables

1. Which type of data type is designed by the programmer?

- a) primitive
- b) derived
- c) user-defined

2. Write output of following:

<p>a)</p> <pre>#include <iostream> using namespace std; int main() { int a = 55; int b = 44; cout<<a+b; return 0; }</pre>	<p>b)</p> <pre>#include <iostream> #include <string> using namespace std; int main() { char a = '55'; char b = '44'; cout<<a+b; return 0; }</pre>
<p>c)</p> <pre>#include <iostream> using namespace std; int main() { bool b = 5; cout<<b; return 0; }</pre>	<p>d)</p> <pre>#include <iostream> using namespace std; int main() { char a = 75; char b = '75'; cout<<a<<endl; cout<<b<<endl; return 0; }</pre>

3. State difference between

```
int a = 10;
int a[10];
```

4. Print ascii values of characters 'X' , '' , '*' , 'a' , 'A' , ':' , ',' , 'b'.

5. Run the program in the compiler. Can you state the reason for the unexpected output?

```
#include <iostream>
using namespace std;
int main()
{
    int a=100000*100000;
    cout<<a;
    return 0;
}
```

6. Following are the names of certain variables used by a programmer to code in C++. Identify the variables which are NOT valid in C++ and give reason:

- a) first_name
- b) firstName
- c) first_name
- d) _firstName
- e) first2020Name
- f) 1stName
- g) first%name
- h) %first_name
- i) FirstName
- j) First_name

7. Run the following program and check the output:

```
#include <iostream>
using namespace std;
int main()
{
    char A = 112; char B = '112';
    cout << A << "\n"; cout << B;
    return 0;
}
```

Is there any difference between the data stored in variables A and B? Why?

8. Declare variables to take the density (kg/m^3), length (m), and cross-sectional area (m^2) of a steel beam as inputs and display its total weight as output.

9. Debug the following programs:

a)

```
#include <iostream>
using namespace std
int main()
{
    int %marks = 72;
    cout << "Your marks is" \n;
    cout << %marks;
    return 0;
}
```

no variable can be defined with name including % sign

\n should be inside string

b)

```
#include <iostream>
using namespace std;
int main()
{
    int physics=74, chemistry=87, maths=92;
    int total = physics + chemistry + maths;
    cout << total;
    return 0;
}
```

datatype of total is not defined

c)

```
#include <iostream>
using namespace std;
int main()
{
    const int length = 19456783;
    const int breadth = 45309876;
    long long int area = length *breadth;
    cout << area;
    return 0;
}
```

it should be long int everywhere