Object Oriented Programming in C++ Laboratory

— 25 points

Tutorial-4 (Complete by 13 Sep 2023)

1. (1×8+2 points) Write declaration for the following: a pointer to a character, an array of 10 integers, a reference to an array of 10 integers, a pointer to an array of character strings, a pointer to a pointer to a character, a constant integer, a pointer to a constant integer, a constant pointer to an integer, an a constant pointer to a constant double. Initialize each one.

2. (3 points) Explain the output of this program.

```
#include <iostream>
int main()
{
    const char* str1 = "We love C++ programming\n";
    char str2[100];
    char *p = str2;/*name of an array is implicitly converted
                    to pointer to the first element.*/
    while(*p++ = *str1++){}
    std::cout << str2;
}
```

3. (2+2 points) Explain the output and the errors, if any.

```
#include <iostream>
const char* createString(){
    return "Practice makes a man perfect";
}
int* createInt(){
    int x = 100;
    return &x;
}
int main(){
    const char *str = createString();
    std::cout << "string = " << str << std::endl;
    int *ip = createInt();
    std::cout << "integer = " << *ip << std::endl;
}
```


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4. (3 points) The following program generates runtime error. Explain the reason(s) and rectify the program.

```
int main()
{
     char *str = "India vs Pakistan, Asia Cup 2023";
     str[7] = 'V';
     double darr[] = {2.3, 4.5, 5.5};
     *(darr+3) = 6.5;
     extern float f;
     float g = f * 100.5;
     short int i = 89;
     void *v = &i;
     int *ip = static_cast<int*>(v);
     cout << "integer = " << *ip;
}
```

5. (1+1 points) Write a function that swaps (exchanges the values of) two integers. Use int* as the argument type. Write another swap function using int& as the argument type.

6. (3 points) Define a table of the names of months of an year and the number of days in each month. Print out this table. Do this twice: once using an array of char for the names and an array for the days and once using an array of structures, with the structure containing the name of the month and the number of days in it.

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