Dept of Electronics&Communications   **First Year**
Data Structure   **Pointers**   **Sheet #3**
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wait 1- The output of the following programs will be:
i) void fun(int *p)
{   int **q;   q = &p;   cout<< q;}
int i;
int main()
{   int *vptr;
    vptr = &i;
    fun(vptr);   return 0; }

A. Error in compilation
B. The address of I will be printed
C. No output
D. The address of p will be printed

ii) The output of the following program:
int main()
{   int arr[4][4] = {10, 2, 3, 4, 5, 6, 7, 8};
    int *p, *q;
    p = &arr[1][1];
    q = (int*) arr;   casting to pointer
    cout<< *p<<"   "<< *q;   return 0; }

    A. 6, 10
    B. 10, 2
    C. 8, 1
    D. 4, 5

**ptr no *ptr

iii) The output of the following program will be
int power(int *ptr)
;int b;   cout<<ptr<<endl   }   take pointer then return squre of the value
{ ;b = *ptr**ptr;   return (b)   it holds in int
()int main
/* int a=5, *aa; /* assume Address of 'a' is 1000   }
/* aa = &a; /* assume Address of 'aa' is 1004
;cout<<&aa<<endl
      { ; cout<< a;   return 0 a = power(&aa);

5	1000		A. 1000
5	1004		B. 1004
25	1004		C. 1000
125	1004		D. 1000

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iv. What will be the following program do
```
char str1[50];    char str2[50];    char *stp1= str1;    char *stp2 = str2;
   int i=-1;
   gets(str1);
   while(*stp1)
   {    stp1++;    i++;    }
   while(i>=0)
   {    stp1--;
    *stp2 = *stp1;
    stp2++;    i--;    }
   *stp2='\0';  return 0;}
```

A. Copy string str1 in string str2
B. Concatenate str1 with str2
C. Reverse str1 in str2
D. Gives compilation error

2- Show the output of the following programs without using C++ compiler:

a) void swap(int * q, int * p)
```
{  int temp = *p;
  *p = *q;
  *q = temp; }
```
10 2 3 5
2 10 5 3

```
 main()
{  int  a = 10,  b = 2,  x = 3,   y = 5;
  Cout<<a<<"  "<<b<<"  "<<x<<"   "<<y<<endl;
  swap(&x, &y);    swap(&a, &b);
  Cout<<a<<"  "<<b<<"  "<<x<<"   "<<y<<endl;}
```

b) void rectangle (int a, int b, int * area, int * perim)
```
   {  *area = a * b;    *perim = 2 * (a + b);}
   main( )
     {  int x, y;    int area,  perim;
        cout<<"Enter two values separated by space: " ;
        cin>>x>>y;
        rectangle(x, y, &area, &perim);
        cout<<"Area is    "<<area<<" Perimeter is   "<< perim;}
```
assume input 2 3
Enter two values separated by space : 2 3
Area is 6 Perimete is 10

c) main( )
```
     {short nValue = 7; // &nValue = 0012FF60
short nOtherValue = 3; // &nOtherValue = 0012FF54
short *pnPtr = &nValue;   cout << &nValue << endl;
cout << nValue << endl;  cout << pnPtr << endl;
cout << *pnPtr << endl;  cout << endl;
 *pnPtr = 9;   cout << &nValue << endl;
cout << nValue << endl; cout << pnPtr << endl;
cout << *pnPtr << endl; cout << endl;
 pnPtr = &nOtherValue;   cout << &nOtherValue << endl;
```
0012ff60
7
0012ff60
7

0012ff60
9
0012ff60
9

0012ff54
3
0012ff54
3

4
2

```
cout << nOtherValue << endl; cout << pnPtr << endl;
cout << *pnPtr << endl;  cout << endl;
cout << sizeof(pnPtr) << endl;  cout << sizeof(*pnPtr) << endl;}
```

wait   d) int main()
```
        { int *ptr[2];
   int y[2 ][3 ]= {10, 20, 30, 40, 50, 60};
 ptr[0]= y[0]; ptr[1]=y[1];
      for( int i=0; i<2; i++)
    { cout<<" array,   row "<<i<<endl;
       for( int j=0; j<3; j++)
      cout<< y[i][j]<< "      ";
              cout<<endl;}
     cout<<endl<<endl;
         cout<<" array through pointer "<<endl;
         for( int j=0; j<3; j++)
          cout<< *(ptr[0]+j)<< "      ";
           cout<<endl;
          for( int j=0; j<3; j++)
                  cout<< *(ptr[1]+j)<< "      ";
                  cout<<endl<<"   pointer   "<<endl;
                  for( int j=0; j<3; j++)
                  cout<< ptr[0]+j<< "      ";
                  cout<<endl;
                        for( int j=0; j<3; j++)
                        cout<< ptr[1]+j<< "      ";
                     return 0;   }
```

3- Point out the compile time error in the programs given below without using
    the compiler and correct them if found.

   i) int main()
```
   {    int  x;
      *x=100;
      return 0; }
```

   ii) int a[ ] = {10, 20, 30, 40, 50};
```
     k= &a;
         for( int j=0; j<5; j++)
     {      cout<< a<< "      ";
             a++;
       cout<< *k+j<<"      ";   }
           return 0; }
```

   iii) int main()
```
   {    int *c;
      *c = check(10, 20);  cout<< *c;     return 0;   }

      int *check( int i,  int j)
```

```
{    int *p, *q;
  p = i;      q = j;
  if(i >= 45)        return (p);    else    return (q);  }
```

4- Write a program to allocate memory to two pointer variables of type integer and float using new operator, assign values to these allocated memory using cin. Then display the addresses and the contents of the memory location and deallocate the memory.

5- Write a program that reads 10 elements and assign them in an array by using pointers. Then prints the array elements using pointers and array name.

6- Write a main program that reads an array of n integer elements, then use a pointer that points to the array. Then use a function to get the average value of the array by passing the pointer of the array to the function.

7- Write a main program to read certain character and a string as array of characters, then use a pointer to the string to find the number of occurrences of the character in the string.

8- Using the pointer notation, write the function reverse ( ) that reverse a string, the function takes the string as argument.

9- Using pointer notation, write a program to transfer 80 characters from string s1 to string s2 (s1 and s2 are array of characters).