**Dept of Electronics&Communications First Year**

**Data Structure Pointers Sheet #3**

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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;

cout<< \*p<<" "<< \*q; return 0; }

1. 6, 10
2. 10, 2
3. 8, 1
4. 4, 5

iii) The output of the following program will be

int power(int \*ptr)

{ int b; cout<<ptr<<endl;

b = \*ptr\*\*ptr; return (b); }

int main()

{ int a=5, \*aa; /\* assume Address of 'a' is 1000 \*/

aa = &a; /\* assume Address of 'aa' is 1004 \*/

cout<<&aa<<endl;

a = power(&aa); cout<< a; return 0; }

A. 1000 1000 5

B. 1004 1004 5

C. 1000 1004 25

D. 1000 1004 125

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

1. Show the output of the following programs without using C++ compiler:
2. void swap(int \* q, int \* p)

{ int temp = \*p;

\*p = \*q;

\*q = temp; }

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;}

1. 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;}

1. 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;

cout << nOtherValue << endl; cout << pnPtr << endl;

cout << \*pnPtr << endl; cout << endl;

cout << sizeof(pnPtr) << endl; cout << sizeof(\*pnPtr) << endl;}

1. 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; }

1. 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); }

1. 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.
2. 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.
3. 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.
4. 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.
5. Using the pointer notation, write the function reverse ( ) that reverse a string, the function takes the string as argument.
6. Using pointer notation, write a program to transfer 80 characters from string s1 to string s2 ( s1 and s2 are array of characters).