**Instructions: Please read carefully**

* Please rename this file as only your ID number **(e.g. 18-\*\*\*\*\*-1.doc or 18-\*\*\*\*\*-1.pdf).**
* Submit the file by **Next Class** in the Portal Performance section labeled **Task 11. If you cannot complete the full task, do not worry. Just upload what you have completed.**

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| **Your code here:**  #include <iostream>  #include <conio.h>  using namespace std;  void max\_heapify(int \*a, int i, int n)  {  int j, temp;  temp = a[i];  j = 2 \* i;  while (j <= n)  {  if (j < n && a[j+1] > a[j])  j = j + 1;  if (temp > a[j])  break;  else if (temp <= a[j])  {  a[j / 2] = a[j];  j = 2 \* j;  }  }  a[j/2] = temp;  return;  }  void build\_maxheap(int \*a,int n)  {  int i;  for(i = n/2; i >= 1; i--)  {  max\_heapify(a,i,n);  }  }  int main()  {  int n, i, x;  cout<<"enter no of elements of array\n";  cin>>n;  int a[20];  cout<<"enter element";  for (i = 1; i <= n; i++)  {  cin>>a[i];  }  build\_maxheap(a,n);  cout<<"Max Heap"<<endl;  for (i = 1; i <= n; i++)  {  cout<<a[i]<<" ";  }  getch();  } |
| **Your whole Screenshot here: (Console Output):** |

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| **Your code here:**  #include <iostream>  using namespace std;  void heapify(int a[], int b, int c)  {  int largest = c;  int le = 2\*c + 1;  int ri = 2\*c + 2;  if (le < b && a[le] > a[largest])  largest = le;  if (ri < b && a[ri] > a[largest])  largest = ri;  if (largest != c)  {  swap(a[c], a[largest]);  heapify(a, b, largest);  }  }  void heapSort(int a[], int b)  {  for (int c = b / 2 - 1; c >= 0; c--)  heapify(a, b, c);  for (int c=b-1; c>0; c--)  {  swap(a[0], a[c]);  heapify(a, c, 0);  }  }  void printArray(int a[], int b)  {  for (int c=0; c<b; ++c)  cout << a[c] << " ";  cout << "\n";  }  int main()  {  int a[5];  cout<<"enter elements";  for(int c=0;c<5;c++)  {  cin>>a[c];  }  int b = sizeof(a)/sizeof(a[0]);  heapSort(a,b);  cout <<"\n Sorted array is:";  printArray(a,b);  return 0;  } |
| **Your whole Screenshot here: (Console Output):** |

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| **Your code here:**  #include <iostream>  #include <conio.h>  using namespace std;  void heapify(int a[], int x, int i)  {  int largest = i;  int l = 2 \* i + 1;  int r = 2 \* i + 2;  if (l < x && a[l] > a[largest])  largest = l;  if (r < x && a[r] > a[largest])  largest = r;  if (largest != i) {  swap(a[i], a[largest]);  heapify(a, x, largest);  }  }  void heapify2(int a[], int x, int i)  {  int smallest = i;  int l = 2 \* i + 1;  int r = 2 \* i + 2;  if (l < x && a[l] < a[smallest])  smallest = l;  if (r < x && a[r] < a[smallest])  smallest = r;  if (smallest != i) {  swap(a[i], a[smallest]);  heapify2(a, x, smallest);  }  }  void printArray(int a[], int x)  {  for (int i = 0; i < x; ++i)  cout << a[i] << " ";  cout << "\n";  }  int main()  {  int n, i, x,ch;  int a[]={45, 36, 54, 27, 63, 72, 61,18};  x = sizeof(a) / sizeof(a[0]);  cout<<"1 :For Insert a new element";  cout<<"\nEnter choice : ";  cin>>ch;  switch(ch){  case 1:cout<<"\nenter no of elements to add :";  cin>>n;  for (i = 1; i <= n; i++)  {  cout<<"\nenter element : ";  cin>>a[i];  }  case 2:  default :  cout<<"Enter valid number";  }  getch();  } |
| **Your whole Screenshot here: (Console Output):** |

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| **Your code here:** |
| **Your whole Screenshot here: (Console Output):** |