Dynamic Web Development in JSP
Spring 2024

EX 1: Simple Programming

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The Imperial Particles

The Empire use Imperial Particles as a source of energy to power the Death Star.
Imperial Particles are located on a quantum map and the location determines the type of particle.

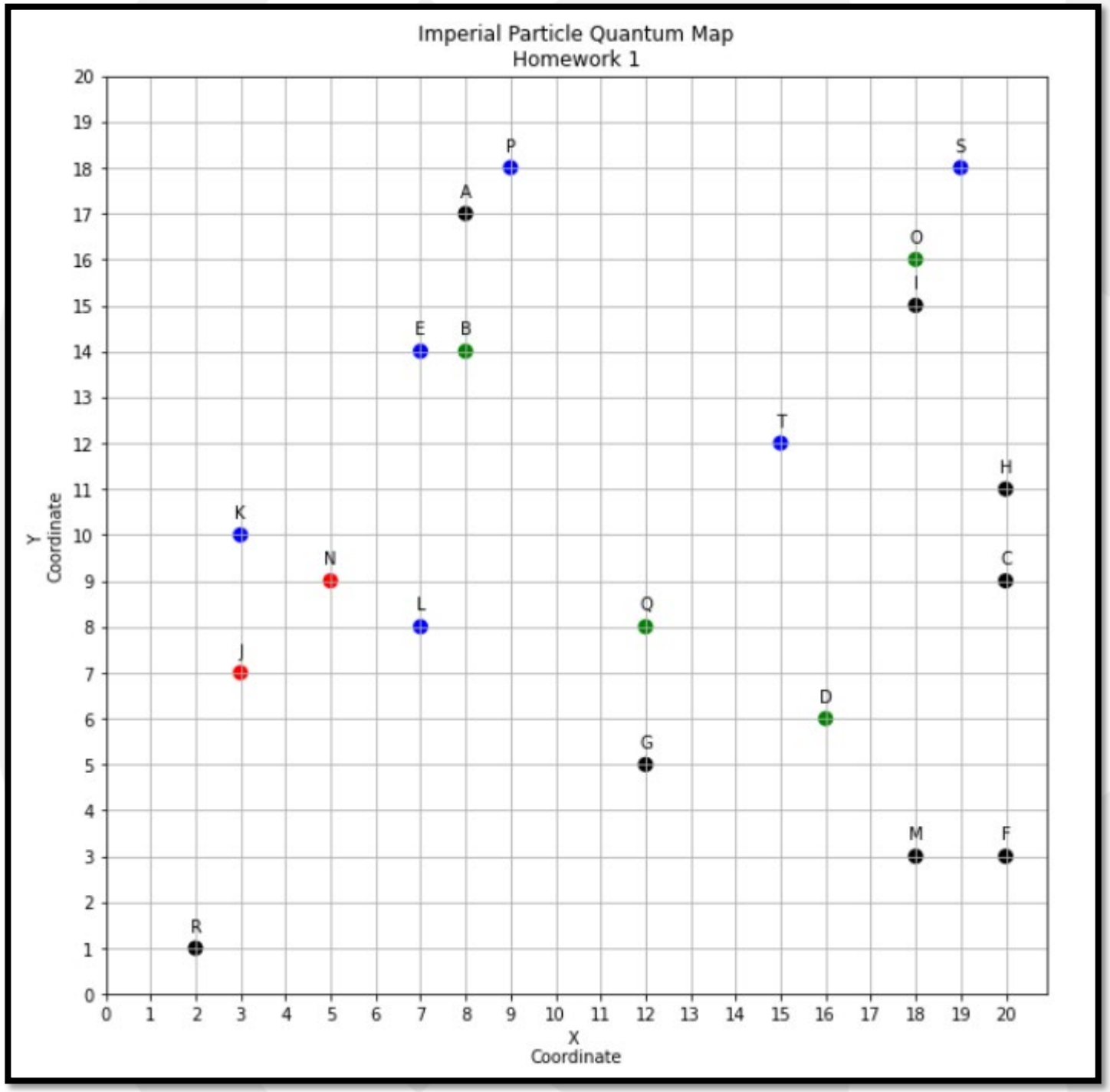
There are four types of Imperial Particles

Mu Particles: Has an X Coordinate that is **ODD** and an Y Coordinate that is **EVEN** It has a mass that is equal to **1.5** times its distance to the map origin. The Mu particle color is **BLUE** and its spins in the **LEFT** direction.

Sigma Particles: Has an X Coordinate that is **ODD** and an Y Coordinate that is **ODD** It has a mass that is equal to **1.75** times its distance to the map origin. The Sigma particle color is **RED** and its spins in the **RIGHT** direction.

Tau Particles: Has an X Coordinate that is **EVEN** and an Y Coordinate that is **EVEN** It has a mass that is equal to **2.5** times its distance to the map origin. The Tau particle color is **GREEN** and its spins in the **UP** direction.

Omega Particles: Has an X Coordinate that is **EVEN** and an Y Coordinate that is **ODD** It has a mass that is equal to **2.75** times its distance to the map origin. The Omega particle color is **BLACK** and its spins in the **DOWN** direction.



Task

- Given the quantum map of Imperial Particles shown on the left, **create the corresponding chart shown on slide 4**.
- The origin of the quantum map is 0,0.

Program Specifications

- Your code must produce the output **EXACTLY** as shown on Slide 4.
- You **MAY NOT** hardcode any value that should be calculated. Distance, Average Distance, Smallest, etc.
- Your solution MUST INCORPORATE the use of one or more 1D arrays.
- All calculation and printing to the console must be conducted INSIDE A SINGLE FOR OR WHILE LOOP. ***As shown on Slide 4.***

Problems Javadoc Declaration Console

<terminated> Gene (47) [Java Application] C:\Users\GeneLocklear_fea30p7\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_18.0.1.v20220515-1614\jre\bin\javaw.

Particle	X Coord	Y Coord	Distance To Origin	Color	Spin	Mass	Particle Type
PA_A	8	17	18.79	Black	Down	51.67	Omega
PA_B	8	14	16.12	Green	Up	40.31	Tau
PA_C	20	9	21.93	Black	Down	60.31	Omega
PA_D	16	6	17.09	Green	Up	42.72	Tau
PA_E	7	14	15.65	Blue	Left	23.48	Mu
PA_F	20	3	20.22	Black	Down	55.62	Omega
PA_G	12	5	13.00	Black	Down	35.75	Omega
PA_H	20	11	22.83	Black	Down	62.77	Omega
PA_I	18	15	23.43	Black	Down	64.43	Omega
PA_J	3	7	7.62	Red	Right	13.33	Sigma
PA_K	3	10	10.44	Blue	Left	15.66	Mu
PA_L	7	8	10.63	Blue	Left	15.95	Mu
PA_M	18	3	18.25	Black	Down	50.18	Omega
PA_N	5	9	10.30	Red	Right	18.02	Sigma
PA_O	18	16	24.08	Green	Up	60.21	Tau
PA_P	9	18	20.12	Blue	Left	30.19	Mu
PA_Q	12	8	14.42	Green	Up	36.06	Tau
PA_R	2	1	2.24	Black	Down	6.15	Omega
PA_S	19	18	26.17	Blue	Left	39.26	Mu
PA_T	15	12	19.21	Blue	Left	28.81	Mu

```
Cumulative Particle Mass:  750.87 imperials
Smallest Particle Mass:      6.15 imperials
Largest Particle Mass:      64.43 imperials
Average Particle Distance:  16.63 cm

-------------------------------------Chart Prepared By H.G. Locklear
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This output must be printed inside the loop